

# *The Electragist*

TRADE MARK REG. U.S. PAT. OFFICE

Vol. 26, No. 2

*Association of Electragists*  
INTERNATIONAL

DECEMBER, 1926

A New Member  
of the Triangle Family----



## **Rigid Steel Conduit**

Triangle Galvanized [Electro]  
Triangle Enameled  
All Sizes -- Couplings and Elbows

Manufactured under one  
roof from steel skelp to the  
finished product in the most  
modern and complete con-  
duit factory in operation.

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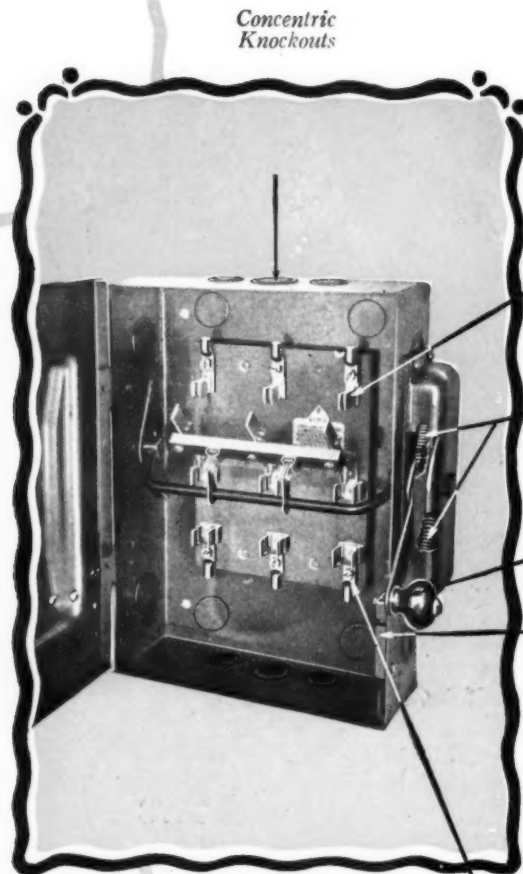
**Ready for Delivery January 1st, 1927**

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### **TRIANGLE CONDUIT COMPANY, Inc.**

General Offices: Dry Harbor Road and Cooper Ave., Brooklyn, N. Y.  
Factories: Brooklyn, New York; Chicago, Illinois; Butler, Pa.  
In Canada: Canadian Triangle Conduit Company, Ltd., Toronto

# Every Industrial Plant has use for this Safety Switch



Type A contact.  
The contact finger is of spring copper, sweated and pinned into solid terminal block.

2 heavy springs which operate switch.

Safety handle.

Interlocking device prevents access to fuse until they are dead.

There are many safety switches, but this Type "A" heavy duty  $\nabla$  Safety Switch is built, not on a price basis, but rather to give the industrial plant a switch that will meet every requirement of service, for all time.

It is very ruggedly built and made to stand up under full load or overload conditions without breakdown. It will last indefinitely, and will continually guard the safety of employees. The installation of these switches is good insurance. A few of the important features are pointed out above.

We make meter service switches to meet the requirements of every central station throughout the United States.

The industrial field offers a very large opportunity for installation of Safety Switches and the T-V line is composed of a safety switch for every possible industrial use.

The industrial field offers a very large opportunity for installation of Safety Switches and the T-V line is composed of a safety switch for every possible industrial use.

The  $\nabla$  line of safety and knife switches is complete.



Type "A" closed.  
Fool proof and good insurance.

Type "A" heavy duty  $\nabla$  Safety Switch

Made in all capacities. For general industrial use.

Fuse clip terminals

TRUMBULL-VANDERPOEL  
ELECTRIC MFG. CO.  
BANTAM, CONN.

Complete stocks are carried in eleven distributing points throughout the United States



# SAFETY SWITCHES



# The Electragist

(The National Electrical Contractor and The Electrical Contractor-Dealer)

Official Journal of the  
Association of Electragists—International

Vol. 26

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No. 2

## How One Contractor Handles His Inventory

*A Discussion of How to Take Inventory without Disturbing Normal Working Conditions and an Explanation of the Factors Involved in Simplifying the Process*

FOR many contractors the first of the year is their most troublesome period because of the necessity then of taking inventory. Unless some definite system has been worked out for simplifying the work, it is apt to upset the routine of the business for several days, cause the postponement or delay of productive work and prove a source of much more annoyance than is necessary.

The remedy for all this is some rigidly maintained system for storing supplies and keeping track of them. No one system is necessarily the best since each contractor has his individual problems to meet in the matter of stock room space, personnel, distance from jobber, accounting system, etc. However, there are many good points in that employed by the Austin Electric Supply Company, White Plains, N. Y., formerly the Westchester Electric Supply Company, the system having been worked out by John T. Macintyre, secretary and general manager of the company, and formerly with the New York Electrical Board of Trade.

The keystone of his system is carrying as small a stock as possible. Under present conditions, when all trades are becoming accustomed to hand-to-mouth buying, he contends, there is no reason for a contractor to carry any more than what might be known as

THE source of these observations on inventory methods is John T. Macintyre, Austin Electric Supply Company, White Plains, N. Y. Until recently he was with the New York Electrical Board of Trade in which position he had contact with hundreds of electrical contractor-dealers every month, studying their problems and suggesting various methods that would help them. During the greater part of this year he has been active in the management of the contracting and merchandising business named above and thus he is peculiarly fitted to talk of management problems from both the theoretical and the practical viewpoint.—The Editor.

"transient" stock. In the metropolitan territory this is easily accomplished since 24-hour delivery can be obtained from jobbers. It is not much more difficult even though the contractor is several hundred miles from a jobber, for that means a three to four-day delivery period. Keeping stock down merely entails more forethought and vigilance concerning the needs of the contracts under way. In fact, there is rarely a job of such an emergency character that material for it cannot be ordered as much as a week in advance and laid

down right on the job without passing through the stockroom. Eighty percent of the construction material used by the Austin company is handled this way. The material stocked consists almost wholly of material returned from jobs and repair and shop material.

Stock for the company's merchandising department is handled on the same principle. What appliances and devices are on display comprise the entire stock as a rule, except at certain periods, such as at Christmas and in June. Even in hot weather when fans are in demand or during cold snaps, when portable heater business is particularly good, the company does not stock way up on these since the supply can be rushed from a nearby jobber. Merchandise stock is usually limited to a few of each small item, such as irons or toasters, and one each of such large appliances as washers, ironers or refrigerators.

To get away with this and insure prompt deliveries a contractor must be on good terms with his jobbers and this can best be accomplished by giving a few jobbers large orders, not by giving a little business each to a lot of jobbers. Since Mr. Macintyre's association with the firm, it has cut its accounts from 50 or 60 down to 14. Then each jobber gets enough business over a period of a year to keep him inter-



ested in each individual order no matter how small it may be.

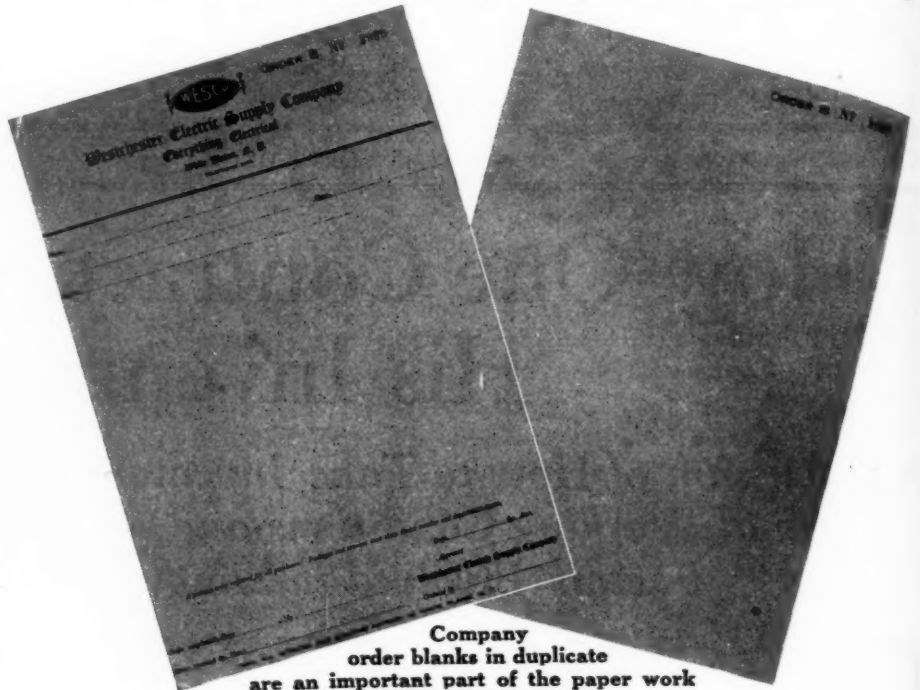
Keeping the fixture stock low is even more simple. The Austin company sells almost wholly from samples and the entire stock is to be found in the fixture display room. An interesting feature of the company's fixture policy is that when a sample fixture has been hanging for three months it is sold and a new sample is ordered. In this way the stock is always kept fresh.

Having settled on a buying policy that will keep stock down the next thing, according to Mr. Macintyre, is to install some sort of system which will follow each item through from the moment of ordering to the moment of use. As the first step in this system, the Austin company uses its own order blanks for all purchasing. Not only does this obviate the confusion that often results from using the order blanks of jobbers' salesmen, but it also makes the records uniform, and shows for what purpose the material has been bought, whether for job, stock, repair or shop.

When the goods arrive they are distributed to the proper department, after being checked against the order blank. The department head initials the card

further on. When new material is received it is entered on the card for the proper bin. The general data required by the card has already been filled in so that little time is required to add the record of each new shipment.

difference between the two totals is the quantity of stock that should be on hand. The cost of this stock is easily arrived at by figuring from the cost prices shown on the stock cards. The price fluctuations which occur during



Company order blanks in duplicate are an important part of the paper work that simplifies the inventory

AISLE NO. _____		ARTICLE _____		DANGER NO. _____											
BIN NO. _____				COST PRICE _____											
MODEL _____		PART NO. _____		SELLING PRICE _____											
				LIST PRICE _____											
ORDERED		RECEIVED		SOLD		BALANCE ON HAND		ORDERED		RECEIVED		SOLD		BALANCE ON HAND	
DATE	QUANTITY	DATE	QUANTITY	DATE	QUANTITY	DATE	QUANTITY	DATE	QUANTITY	DATE	QUANTITY	DATE	QUANTITY	DATE	QUANTITY
					</										

This standard stock card aids in obtaining yearly totals of sales and purchases

bon of the original order and it is then a record showing who is responsible for the material.

There are two more steps in the paper work, one of which consists of entering the proper data on the standard stock card shown above. Entries are made in the following manner:

Each type of material stocked is given a bin number as will be explained

The final bit of paper work comes with the daily costing of sales, which gives quantities of material sold as well as cost and selling price. By totaling these quantities day after day the company comes to December 31 with the knowledge of exactly how much material has been sold for the year.

Total purchases are arrived at in the same way by using the stock cards. The

the year need not cut much ice since the stock on hand is so small.

Actual taking of the inventory, Mr. Macintyre says, can be accomplished by two men in eight hours' time. The work is facilitated considerably by the arrangement of the stockroom. It has 226 bins in all and these are divided into seven sections, separated one from the other by posts painted white. The sections, respectively, are for:

1. Switches, boxes, etc.
2. Fittings
3. Fusing material
4. Wire and conduit. (These are in spaces set apart, not in bins)
5. Store stock
6. Bells, annunciators, etc.
7. Motor parts

Repair shop material is stored in the shop itself, where it will be handy. Fixture stock is not stored, since practically all of this stock is hanging in the fixture showroom.

This system, while not complicated, does demand faithful adherence to its details if it is expected to rout the bugaboo of inventory time. This need not deter anyone from putting it into operation or at least one embodying its best points, since the paper work can easily be made a part of daily routine.



# Electragists Introduce Installment Sales Insurance

**A. E. I. Announces New Customer Service Whereby Electragists Give Purchasers Protection on all Time Payments Falling Due While They Are Sick or Disabled**

**T**IME payment selling ordinarily holds one serious danger for the seller—and time payment buying holds the same serious risk for the customer. So long as the customer remains able-bodied and his earnings are not interrupted time payments can be met as he planned them when he contracted for the purchase.

But let a serious illness or an accident disable the purchaser and lay him up for weeks or months, then not only is his income interrupted, but doctors' bills and other expenses eat into his money and his installment payments falling due become a source of worry to both the customer and the electragist. Payments become delinquent, piling up on each other while the disabled purchaser lies in bed worrying and the electragist must seek other money to meet his own bills. Or if the purchaser is killed by accident then usually the seller must take steps to recover either the goods that were sold or the money due.

## **New Type Insurance**

The Association of Electragists has worked out with its insurance underwriters a new type of insurance which becomes a valuable service offered by electragists to customers buying housewiring or appliances on the time payment plan. At the same time this new insurance is an equally valuable protection to the electragist, whether he carries the installment paper himself or handles it through a finance company.

Under this insurance plan the electragist guarantees to his time payment customer that if the customer is sick or disabled by accident for more than fifteen days during his contract all payments falling due while he is laid up will be paid by the insurance—and the best part of it is he has nothing to make up when he gets well. And if he dies of injuries all remaining payments are paid by this insurance.

The new A. E. I. insurance plan pro-

vides protection to both the electragist and the purchaser against the risks of sickness or accidents. The plan is known as the Electragist Purchaser's Protective Disability Guarantee and is available to members of the Association of Electragists. The insurance is underwritten for the A. E. I. by the Utilities Indemnity Exchange of St. Louis, which has written other forms of electragists' insurance for A. E. I. members for more than ten years.

## **Simplicity**

The method worked out for handling this time payment sales service to the customer is remarkably simple. Any electragist who does housewiring on the time payment plan or sells appliances on installments can apply for this insurance plan through the A. E. I. He will receive a Purchaser's Protective Disability Policy, which becomes his insurance contract with the insurance company covering the Purchaser's Guarantee Certificates which he gives to his customers. The electragist pays no premiums at the time of delivery of the policy and assumes no obligation to pay except as the Purchaser's Certificates are subsequently issued.

With his policy the electragist receives a supply of Purchaser's Protective Disability Guarantee certificates, on triplicate forms. These certificates are numbered, assembled and blocked in book form, with complete instructions for using the certificates, computing premiums, etc., printed on the inside of the front cover. He receives also a schedule of the guarantee rates covering for periods from three months to twenty-four months installments.

The Purchaser's Guarantee Certificates are in three colors, the original in white for delivery to the purchaser, the second copy in color to be forwarded to the Utilities Indemnity Exchange and the triplicate in another color to be retained by the electragist.

These certificates have printed at the

top the name and business address of the electragist, with the imprint "Member of Association of Electragists, International." The Guarantee certificates are given by the electragist, as a member of the A. E. I., to his customers, as his personal special service to his customers, and no mention of the insurance company appears on the original copies received by the purchasers. The certificates thereby become a valuable advertising feature for the electragist, carrying his name in a service to his customers and in a form which they will carefully preserve.

When the electragist makes a contract with his customer for a housewiring job on time payments or for an appliance sale on installments he fills out the Guarantee form in triplicate, handing the first copy to the purchaser and forwarding the second copy to the insurance company. He still pays no premium at that time, but under the terms of his policy and further shown by a "binder clause" printed on the back of the triplicate certificate which he retains the insurance company is bound upon the risk of the purchaser from date of the certificate until the tenth day of the next month.

## **Cost**

At the end of the current month the Utilities Indemnity Exchange list the several Guarantees issued by the electragist during the month, showing the aggregate amount of premium due, and upon receipt of invoice for this the electragist then pays the premium.

The cost of this insurance protection service given by the electragist to his time payment customer is so nominal that he can readily absorb it in the sales price. The premiums are based upon two factors, the amount of the monthly installments and the length of time of the contract.

For example, a vacuum cleaner sold for \$60, upon terms of \$10 cash and

(Continued on Page 30)

# Labor Costs on Manhattan's Most Modern High School Building

Complete Labor Data on Light and Power Wiring, Fire Alarm, Public and Interior Telephone and Low Tension Bell Systems in Most Common Type of Municipal Construction

By C. J. RYDER, Electrical Engineer,  
Peet & Powers, Inc., New York City

SCHOOL enrollments in all cities have increased so materially in the past few years that school building programs are under way in nearly every community. Thus, data on the labor costs in connection with the electrical installation in New York City's latest and most modern school building should be of interest, especially since few figures have heretofore been available on this type of work. This building, the James Monroe High School in the Borough of the Bronx, consists of five floors and basement, fireproof construction, and occupies an area of 41,000 sq. ft., with a four-story gymnasium building extension having an area of 15,400 sq. ft.

On the first floor there is an auditorium with a balcony, and a stage equipped with electrical apparatus equivalent to a well appointed theater, also a library, ten class rooms and the executive offices; the second, third, fourth and fifth floors are divided into ninety-six class rooms, and there is also a large cafeteria on the fifth floor. The electric work consisted of light and power wiring, a fire alarm system, public and interior telephone systems and a low tension bell system.

The light and power wiring commenced at the secondary side of the transformers which are located by the lighting company in a transformer vault, adjoining the school building; from there the feeders were installed in conduit to the main distribution board; from that point they were subdivided and extended to the various light and power panels in the building consisting of a separate feeder to each panel board. All the feeder conduits were racked on hangers on the basement ceiling to the vertical pipe shafts through which the conduits were installed up to the various panels.

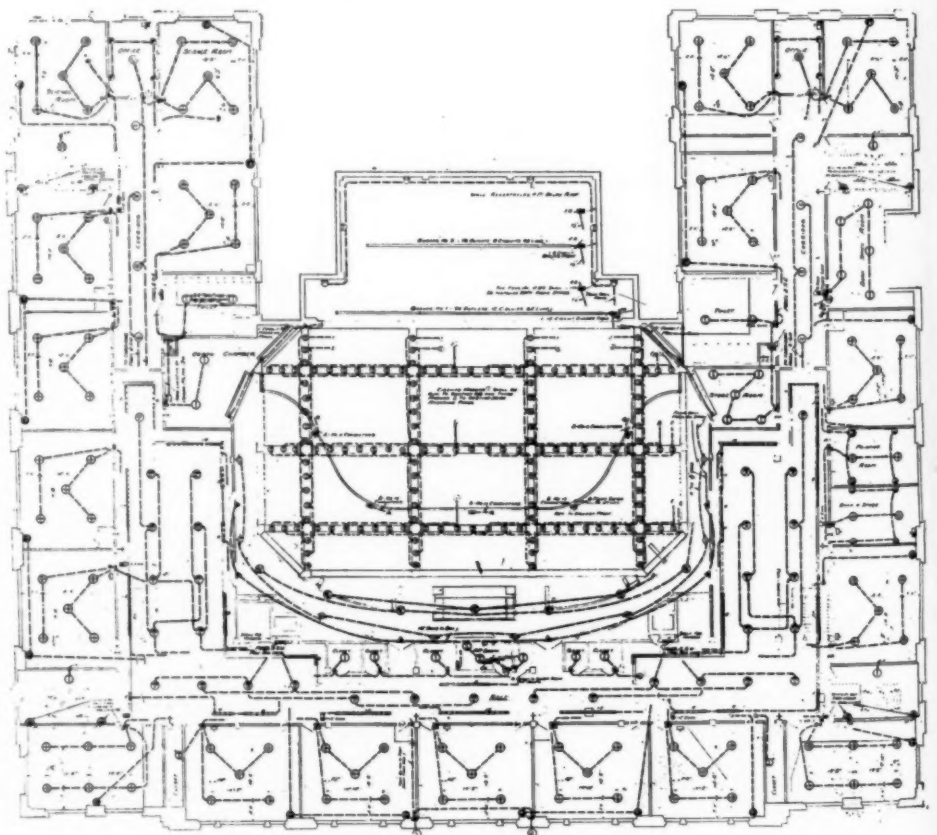
There were four panel locations on each floor proportionately spaced so that the average length of conduit to the first outlet on each circuit was forty feet.

The fire alarm system was arranged with five gongs and four stations on each floor with a control board in the basement; separate conduits were used for gong risers and control stations.

The public telephone system was laid out for eighteen stations on four risers of conduit,  $\frac{3}{4}$ -in. size being used for two telephone outlets and 1-in. conduits for three or four telephone outlets. These conduits extended between telephone outlets and terminated in junction boxes at the basement ceiling.

The interior telephone system had a 72 line switchboard, and 62 outlying stations, and the program bell system had 129 three-inch bells and 46 gongs and were all wired in conduit to pull boxes, four on each floor. From there feeder conduits containing telephone and bell cables were carried in the same pipe shafts with lighting conduits to basement ceiling where they were installed, on racks on the ceiling, to the telephone and bell keyboard location situated in the principal's office on the first floor.

The following is the actual time, including non-productive labor, required to complete the installation, compiled in man hours; all of the circuits, con-



Lighting Plan of the Second Floor



duit, outlet boxes, light and power panels were set by a journeyman and helper. The remainder of the work was installed by four teams, or four journeymen and four helpers.

The non-productive labor on roughing was 11 percent and on finishing was 7 percent, making a total of 9 percent for the complete work.

There were 800 nipples of 1/2-inch

This totals 300,000 feet of No. 18 to No. 10 wire which took 1,594 man hours to install or 5.31 hours per 1,000 feet.

The 27,000 feet of No. 8 to 800,000 c. m. wire installed in 474 man hours is divided as follows:

4,000 feet No. 8 wire  
7,000 feet No. 6 wire  
4,500 feet No. 4 wire  
3,330 feet No. 2 wire  
2,980 feet No. 1 wire  
2,290 feet No. 2/0 wire  
1,200 feet 300,000 c. m. cable  
1,300 feet 400,000 c. m. cable  
200 feet 700,000 c. m. cable  
200 feet 800,000 c. m. cable

This totals 27,000 feet of No. 8 to 800,000 c. m. cable which took 474 hours to install or 17.5 hours per 1,000 feet.

The stage switchboard and magazine panel required 120 man hours labor, for erecting the free standing switchboard on angle iron frame and the magazine panel which was installed on the wall three feet back from the switchboard, both being connected by a steel trough above both boards which carried all the feeder cables and control wires for the stage lighting. The stage switchboard had twenty-nine 100-amp. three-pole, NEC fused knife switches mounted on the rear with interlocking type handles for operating them mounted on the front of the board.

The magazine panel was divided into 110 circuits in thirty sections, each section controlled by a switch on the stage switchboard. The time was divided on the two boards with 44 man hours for the magazine switchboard and 76 man hours for the stage switchboard.

The main switchboard was of the free standing type divided into two sections, one for light and one for power. It was 12 ft. 6 in. long and 6 ft. high, containing one 1200-amp., three 400-amp., four 200-amp., two 100 amp. and four 60-amp. three pole knife switches for power and one 1,500-amp., one 400-amp., three 200-amp., eighteen 100-amp., twelve 60-amp. knife switches for lighting. There was a pull box installed over the full length of the switchboard to which all the copper rods from the switches were carried and there connected to the feeder cables by means of Dossert connectors.

The fire alarm system consisted of one fire alarm control board, thirty-four semi-flush stations and thirty-two 12-inch gongs and ten 10-inch gongs. The time is divided as follows: 24 hours for erecting and connecting up the board complete, 28 hours for the erecting of the stations in the back boxes and making connection to them and twenty hours for installing the gongs and connecting

TABLE I—TOTAL OPERATION IN MAN HOURS

Quantities	Apparatus	Man hours
79,100	Ft. 1/2-in. and 3/4-in. conduit—2,703 outlets	5500
17,360	Ft. 1-in. to 4-in. conduit	2300
300,000	Ft. No. 14 to No. 10 wire	1594
270,000	Ft. No. 8 to 800,000 c. m. wire	474
2,250	Ft. No. 14—4 cond. lead cable	122
960	Switches and receptacles	166
300	Fixtures	194
500	Lamps	16
35	Light and Power panels 551 sws	314
98	Junction and panel boxes	614
53	Motors, compensators and oil sws	608
72	Cove reflectors, averaging 8 1/2 ft. long	160
21	Stage pockets	22
	Magazine panel and stage switchboard	120
	Main switchboard	352
	Fire alarm system, 42 bells, 34 stations	72
	Bell keyboard, battery board and strips	352
	Motor generator outfit	120
	Test switchboard	40
	Telephone switchboard and strips, 62 stations, 72 line switchboard.	160
	Elevator pushes, 8 up and down, 4 up or down	16
	Changing drop cords, pump, boxes and strips boxes	98
2	Borders, one 65 ft. long, one 48 ft. long	152
96	Ft. Footlight—144 receptacles disappearing type	50
Total		13,676 Man hrs.

The following paragraphs give a more detailed account of the various items listed above. The 79,100 feet of 1/2 and 3/4-inch conduit and 2,703 outlets were installed in 5,500 man hours or an average of 230 feet of conduit and 8 outlets per day per team.

The circuit conduit work was divided into three operations: The work installed on the forms, the conduit installed in the hanging ceilings and the pickups or nipping out to outlet boxes. It was in the proportions given in Table II.

Pickup and nipping out included exposed conduit in cellar around battery board and at fire alarm cabinet and small motors and controllers; in other words, all conduit installed after forms and hanging ceiling work was finished.

conduit, 4 inches long, cut and threaded on job in 84 man hours or .105 hour each.

The feeder conduits are divided as follows:

6,160 feet 1-inch conduit  
5,690 feet 1 1/4-inch conduit  
3,650 1 1/2-inch conduit  
1,070 feet 2-inch conduit  
720 feet 3-inch conduit  
30 feet 3 1/2-inch conduit  
40 feet 4-inch conduit

This totals 17,360 feet 1-inch to 4-inch conduit which took 2,360 man hours to install or .136 hour per foot.

Feeder conduits are segregated as shown in Table III on the following page.

The 300,000 feet of No. 14 to No. 10 wire, installed in 1,594 man hours, is divided as follows, including all testing and splicing:

46,000 feet No. 18 wire  
59,000 feet No. 16 wire  
180,000 feet No. 14 wire  
8,000 feet No. 12 wire  
7,000 feet No. 10 wire

TABLE II—TIME ON CIRCUIT CONDUIT

	Conduit Ft.	Boxes	Ft. Between Outlets	Labor, Man Hours	Non-Productive Labor Hours	Total Labor
Conduit in forms	42,640	875	49	1,152	126	1,278
" in hanging ceil.	7,620	720	10 1/2	522	56	578
" nipping	28,840	1,108	26	3,282	362	3,644
Total	79,100	2,703		4,956	544	5,500

TABLE III—TIME ON FEEDER CONDUIT

Quantity	Man Hours	Non-Productive Man Hours	Total Man Hours	Hours Per Foot
1,600 feet in cellar floor	100	10	110	.069
9,960 feet in forms and risers	1,204	132	1,336	.134
5,000 feet on hangers	628	68	696	.139
800 feet nipples at panels	196	22	248	.31
Total 17,360 feet	2,128	232	2,360	

them up on the back boxes for stations and gongs which were already in place, or .82 hour each for the stations and .48 hour each for the gongs.

The two border lights required 152 man hours. This time is excessive for normally hanging borders, but in this case it was necessary to build a scaffold to install them, as they were suspended at a height of thirty feet over the stage, most of the time being absorbed in overcoming an unusual situation.

The footlight was of the disappearing type made up of five-ft. sections and 96 ft. long containing 144 receptacles. Connections were made at splice boxes which occurred at each section of the footlights and the time involved installing it was 50 man hours.

The 120 man hours of labor required for the motor generator outfit consisted

of work installing a three-unit motor generator set with one 10-hp. motor, a 1½-kw. generator and a 5½ kw. generator. The motors and generators were mounted on one cast iron base. A CR 1034 motor starting compensator mounted on a switchboard of the free standing type, supported on an angle iron frame, was installed in the same room. The rheostats and meters were installed on the board and all wiring connections between motor compensator, generators and switchboard, and the testing of all apparatus required 120 man hours.

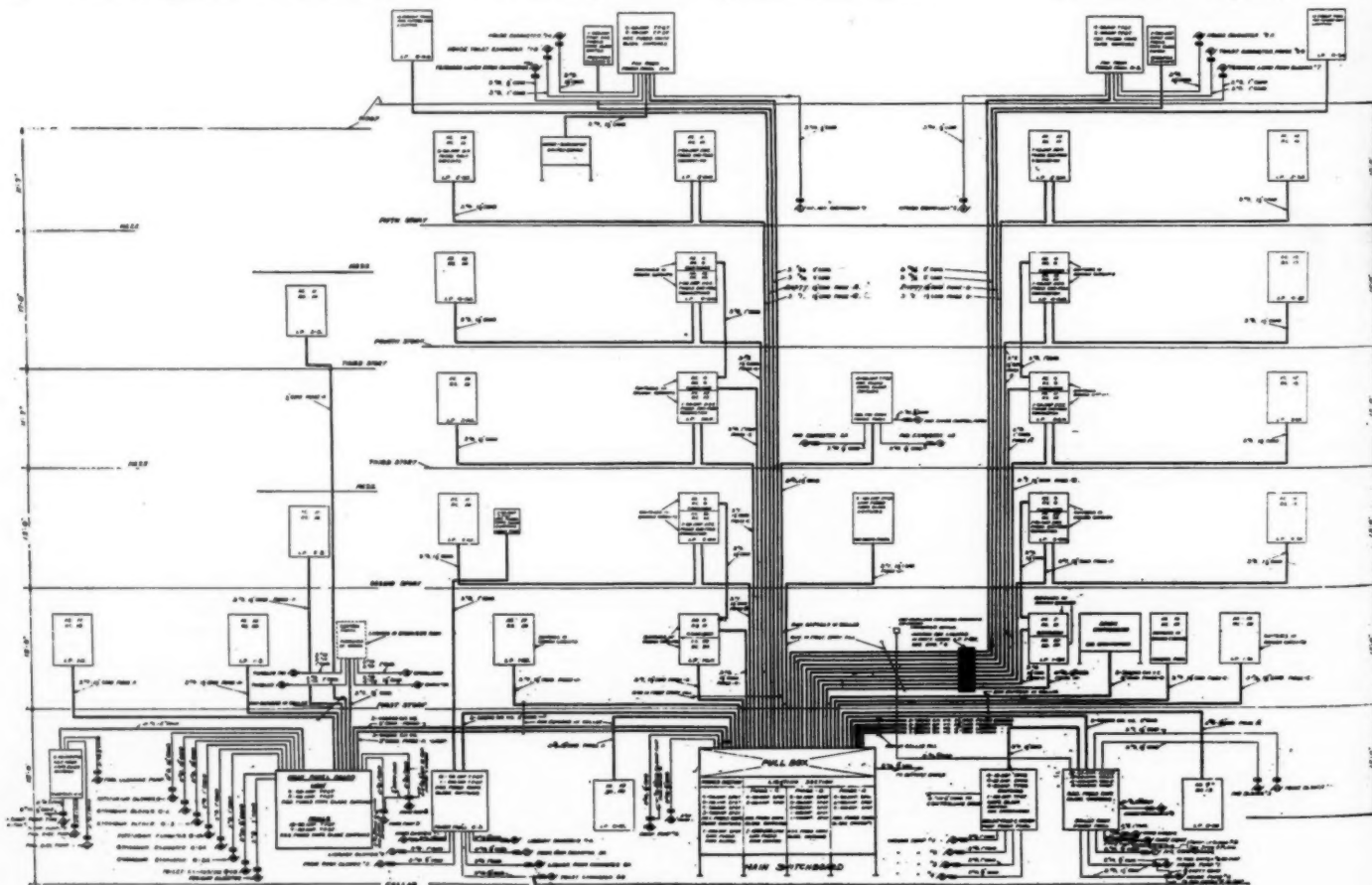
The following are the details for completing all of the motor work which is listed in the summary at 608 man hours setting up motor starter, compensators, oil switches, self-starters, knife switches, pressure regulator and tank

switches. All of the motors were set by others, but the starters were supplied and installed by the electrician. In every case motor switches and starters were mounted on concrete with four expansion bolts.

Three tank switches, pedestal type, single pole (automatic) with seamless float complete with necessary chain and counterweight, each switch set on a separate tank:

Three tank switches set	Man hours
Three tank switches connected. This allows 5 1/3 hours for installing and connecting each tank switch	12
Setting 14 General Electric C. R. 1034 motor-starting compensators for 12-hp. motors	4
Connecting 14 of the above compensators and 14 12-hp. motors	78
This allows 11.86 man hours for wiring up each motor and compensator, including installing compensators	88
Setting 14 General Electric C. R. 1035 motor starting switches equipped with no voltage release and overload protection for 3-hp. motors	56
Connecting the 14 oil switches mentioned above and connecting 14 three-hp. motors	28
This allows six hours for wiring up to each motor and compensator, including installing compensators	
A Sundh No. 4900 single pole pressure regulator in a cabinet mounted on	

(Continued on Page 32)



Light and Power Riser Diagram



# Budgeting Has Saved Money for This Contractor

**B**USINESS, unlike the radio, has no static qualities. It is always going some place, either forward or backwards; and nearly always the business that goes ahead has someone at the steering wheel who knows where he wants to go and how to get there.

It is to this following of a business road map, as much as to hard work, that the average success is due. These road maps are of different sorts for different types of business, but they all agree on the fundamentals: How much business should I do during the coming year and how much should it cost me to do that business? And when the answers to these questions have been found in sufficient detail the result is a budget.

Budgeting is not as difficult as it sounds, if the records of a business have been kept with ordinary care and thoroughness. Briefly put, a man can arrive at a fairly accurate budget for the coming year if he will go over his books, find out what the business has done in the past few years, average the figures and add whatever increase it seems reasonable to expect during the next twelve months.

There are a few other factors to consider, but past performances are the most important influences on the making of a sales and financial plan for the future.

Every contractor-dealer has a pretty good general idea of what his business should do from month to month. But "pretty good" is not efficiency and there are too few men who reduce the general idea to actual figures so that later on they can compare actual results with expectations.

## Starting the Budget

Among the few who do this is Harold W. Benoit, a contractor-dealer of Watertown, N. Y. He has been significantly successful in a small town and he ascribes much of his success to the fact that at the beginning of each year he puts down in black and white what he thinks his business should do and where it should go during that year. His yearly volume is on a par with that

## Budgeting—

1. *Cut Down Benoit's Overhead.*
2. *Helped Him to Buy Properly.*
3. *Gave Him a Selling Plan.*

of the average successful small town contractor, who forms the great majority of the electrical contracting field, and thus his experience and observations on budgeting should be of interest to a large group.

It was about three years ago that he instituted his budget system and the move came as the conclusion to a lot of thinking on the subject. His curiosity started it. Business that year had been good, but the profits from that volume should have been better. His accounting system showed in a general way that expenses had been too high and that several lines had not come up to expectations. That was too bad, of course, but it was then too late to do anything about it. If he had known the facts at the time they were transpiring he might have taken steps to cure the condition; but by the time it did become apparent the milk was spilled and there was nothing to do but resolve not to let it happen again.

But how to accomplish this? It would necessitate the setting up of some standard against which he could measure from day to day and month to month the results he was getting. It would have to eliminate guesswork and at the same time it could not be so complicated that it would be difficult to apply.

This is the way he went about setting up the budget: First he went through his books for the previous three years and got the totals for each year. For the sake of clarity we will assume a certain set of figures, though these are NOT actually Mr. Benoit's figures.

He found that his volume for the years selected had been as follows:

1920 .....	\$60,000
1921 .....	66,000
1922 .....	74,000

Thus 1921 had jumped 10 percent over 1920 and in 1922 the business had done even better than that, but the increase for that year was still close enough to 10 percent to justify the use of that figure as a constant factor. That meant that in 1923 he should do \$84,000 worth of business if the increase remained only normal.

But were there any factors that might make the increase either abnormal or subnormal? The factors indicating an abnormal increase might have included an increase in real estate activity, the location there of several new industries, a co-operative central station campaign on appliances or house wiring. A subnormal increase might have been indicated by the influx of a less well-to-do class, a drop in wages, a long strike, the petering-out of the old house wiring market. None of these being present it could be deemed proper to estimate the 1923 volume as \$84,000.

## By Months

Now the figuring became more complicated. How was this volume divided between the months? The average volume per month in 1922 was \$6,000, but comparison of the three years selected showed that January was the low month of the year, that business continued to get better until June when there was a slight recession, that August went back close to the average and that from then on there was a steady increase until Christmas. The division of volume by months was about as follows for 1922:

January .....	\$ 4,500
February .....	5,400
March .....	6,000
April .....	6,400
May .....	6,700
June .....	5,900
July .....	5,300
August .....	5,700
September .....	6,600

October .....	6,650
November .....	6,750
December .....	7,100
<b>Total .....</b>	<b>\$73,000</b>

Therefore, in 1923, on the basis of a 10 percent increase, January's total should be \$4,950, February's total \$5,940, etc. However, the figures were still too general to act as an automatic signal system. How much of this increase should come from contracting, how much from merchandising, how much from fixtures? So further investigation showed that in order to maintain the quota set he would have to sell the following in January:

New wiring .....	\$2,150
Old house wiring .....	625
Extensions .....	225
Appliances .....	1,275
Fixtures .....	675

Comparison of the three years indicated, however, that the sales of the various items fluctuated more than the totals did. Where then would be the value of setting a definite figure for the turnover of so many irons, so many cleaners, washers, etc.? The answer, he decided, was in the matter of incentive. If he found that the sales of appliances had, during the previous month, fallen below the quota, it would be a warning to push them hard the next month.

From that particular angle alone, according to Mr. Benoit, the budget system proves its worth. It keeps the goal constantly before a man's eyes and provides no excuse for laying down before he reaches it.

Every merchant knows ways to pep up his sales at least temporarily—more advertising, special sales, special window displays of certain articles—and he can use all or anyone of these until the total sales of that article are back within speaking distance of the quota.

But by the same psychological rule, this setting of a goal has one danger—that, having reached the goal, a man will relax his efforts. The owner of a business does not have to guard against this in himself so much as he does in his employees.

The sales budget having been set up, Mr. Benoit now came to the budget for expenses, even more necessary than the former, since many a business with a good volume has been wrecked because expenses got out of hand.

He arrived at his figures on this by a slightly different method than he had used for the sales budget. If he was to estimate his future expenses correctly he would have to eliminate the mistakes that had occurred in the past; so, very patiently, he went through his books to discover items of needless expense. They ranged through such things as "charity" advertising, overbuying on certain items—though until he set the sales quota he had not realized he was overbuying—delivery expenses, telephone and telegraph and most of the other items of his overhead. No one of these needless expenses were very great in themselves, but they formed a total of very respectable size which should have gone into his year's profits.

#### Budgeting Expenses

Going the rest of the way was easy. He calculated the ratio of his overhead to his volume after revising his three years' figures to what they should have been. Then he found what percent of the overhead each item should be and finally turned that into dollars and cents per month. Advertising, for instance, could be put at .68 percent of total volume and if he did \$84,000 worth of business he could afford to spend approximately \$575 on that item over the year, each month taking its share according to its proportion of the year's volume.

By the time his budget system had been in effect for six months Mr. Benoit was thoroughly sold on its value. He found that it was doing these things for him:

1. *Acting as a gauge of his business health.*
2. *Warning him when to speed up.*
3. *Helping him to decide what, how much and when to buy.*
4. *Cutting his expenses down.*

The first two effects of the budget have already been explained. The third is most important and turned out to be, in a way, somewhat unexpected. It has aided him to prevent both overbuying and underbuying and is the basis for his buying methods which were explained in detail in the August issue of THE ELECTRAGIST.

His budget tells him almost to the single item what quantity of any article he will need for a certain period. This is set down on a stock card. Also down on this card is the minimum below

which the stock of the article should not fall. When it does get down to this point an order is sent in for the difference between the amount on hand and the maximum indicated by the budget.

This applies to staple articles rather than special items and if a bargain should come along—something unprovided for in the budget—the decision whether to buy it or not is up to the owner's good judgment. But, Mr. Benoit says, this judgment will at least be aided by knowing whether the business is in shape to risk a flyer without being crippled if things do not turn out well.

As for cutting expenses, the budget has made a hard job somewhat easier. For instance, if the advertising appropriation for the month is about exhausted, that fact stiffens a man's spine for refusal when a committee comes in to ask for an ad in the church picnic program. Or, if the telephone and telegraph money for the month is used up, then everyone is going to take pains to order far enough ahead so that the order can be sent by mail.

#### An Example

A good example occurred not long ago when the Benoit delivery truck needed some repairs. Ordinarily it would have been sent to the shop without question, but having a budget for delivery expense Mr. Benoit compared the repair estimate with the budgeted amount. It showed that the cost of repairing the truck, replacing the tires in the very near future and renting a truck during the repair period would take the actual outlay far above the budget.

That started him thinking about a new truck and he compared the repair cost with the first year's depreciation and the interest on the investment for a new truck. The result showed only a moderate balance between the cost of repairs and that of a new car and the new car was bought.

The budget system is not infallible and it is not a cure-all for business troubles. It is not uncommon, Mr. Benoit admits, for him either to exceed or to undershoot the goal set, both on sales and on expenses. But it is a big help in the conduct of his business.

When selling, he knows by looking at it how much farther he has to go and at what pace and he can try to increase the pace whenever it seems necessary. Also it enables him to cut corners on overhead, which is the best possible way of keeping it low.



# New Columbia University "Lab" Has Completest Installation

Years of Preliminary Planning Are Embodied in System Which Uses Electricity for all the Scientific and Utilitarian Activities of the Laboratories

By PAUL B. NELSON

THE new Physics Laboratories of Columbia University, New York, just completed, contain what is probably the most complete electrical installation of this sort in existence. Preliminary plans were in the making for several years and the system embodies features which are the result of much careful planning and designing. Electricity is used in all of its many applications in a scientific laboratory of this sort, supplies motive power for equipment, and serves in the heat, electrical and optical laboratories.

The building is fourteen stories high and occupies a ground space of 62 ft. by 182 ft. The first floor and floors 5 to 14 are identical in plan; floors 2, 3 and 4 varying slightly as to the arrangement of classrooms. The offices are located on floor 8. On the roof is an astronomical observatory, the rotating and elevating parts of which are operated by electric motors. Room units, known as bays, are 10½ ft. wide and are 20 to 30 ft. long and each has a window. By combination of these units into groups of two, three and four, larger rooms, which may be used for a variety of purposes, are available. There are 34 of these units per floor. Research rooms predominate and the remaining floor space is occupied by general offices as well as recitation rooms, shops, apparatus and demonstration rooms.

The special needs of a building of this sort are many. An extremely large amount of wiring is necessary to care for the requirements of each of the rooms; both alternating and direct current of various voltages and frequencies are needed for experimental work in all parts of the building. It must be possible to connect any of the rooms to any other one by several circuits. The wiring should be flexible so as to allow for extensions or changes. It

The newest addition to the group of buildings comprising Columbia University, New York City, is the Physics Laboratories, shown at the right. It is of interest to the electrical contractor, not only because it houses electrical research and experimental work which will ultimately enrich the art of wiring, but also because the electrical installation embodies wiring for almost every use of electrical current and the layout is probably one of the most unique in existence.



should be arranged so that quick change-overs and temporary connections can be made with ease. Allowance for expansion in the future as well as the student factor must be considered. The "student factor" takes into consideration making the installation easily understood and giving him a knowledge of the general distribution and workings of the system. It should be so plain before the student's eyes that he may trace the wiring from switchboard to panel, and to the exact outlet which he is to use.

Furthermore, the installation should be so designed as to be readily put into operation without causing blunders, resulting in blowing of fuses or the dam-

age of apparatus.

It is essential that polarity be clearly marked as must be the ground connections. A uniform system must be designed and adhered to in all sections of the laboratory. Sizes of conductor far larger than those ordinarily required must be installed to provide for the heavy current that is often required. Moreover, the installation must be sturdy and foolproof, as it will be manipulated very often by inexperienced hands.

These rigid requirements have been very successfully met in the design made by Kaiser, Muller & Davies, consulting electrical engineers of 101 Park Avenue, New York City. The installa-

tion has been done by Hatzel & Buehler, New York. McKim, Mead & White are the architects.

#### Power Supply

The building is furnished with both alternating and direct current service. The 3-wire, 115-230-volt d. c. service is brought in by means of the connecting tunnel system from the university power plant to a main switch panel, from which two feeders go to the general light and power switches on switchboard No. 2, and one to the special d. c. experimental supply sections of switchboard Nos. 1 and 2. Each feeder consists of three 1,500,000 c. m. conductors. Alternating current service, both single phase 3-wire 110-220-volt and 220-volt two phase, is obtained from the United Electric Light and Power Company's underground mains and enters from a transformer vault built inside one of the basement rooms. This feeds to switchboard No. 1. These sources of supply make unnecessary the installation of rotary machines in the building, which otherwise would have been needed.

#### Switchboards

There are four switchboards, Nos. 1 and 2 being located on the first floor in the west and east ends, respectively, and Nos. 3 and 4 being on the seventh floor in the west and east sections, respectively. All switchboards are 13 ft. long, stand 6 ft. high and consist of slate panels 2 in. thick. There is a 1 ft. space between the floor and lower edge of the panel. Panels are at a distance of 4 ft. 6 in. from wall. A pull box is located directly above each switchboard.

The supports for the large cables in pull boxes consist of racks of porcelain insulators, supplemented by fiber rods on which the cables are supported. This results in a very good installation, as the wire does not come in contact with metal at any point. There is no chance for insulation to become worn off by vibration, thus causing a short circuit within the box with disastrous results. As an additional protection, all of the conductors within the box are wrapped with a good quality of asbestos tape.

#### Distribution System

The switches for controlling the lighting feeders of the building and the power feeders for the various elevator, ventilating and observatory motors are on the left section of board No. 1. The

special d. c. experimental supply feeder from the power plant is brought to switchboard No. 2 where it is tapped to feed a section of this board and from there is continued on across the first floor to board No. 1. The d. c. experimental supply sections of boards Nos. 3 and 4 on the seventh floor are supplied by risers from boards Nos. 2 and 1, respectively.

Switchboard No. 1 is of the knife switch type and contains controls for all of the a. c. feeders and the d. c. experimental supply feeders for the entire west end of the building. The a. c. feeds through 100 and 200-amp. switches and goes to the a. c. experimental supply sections of boards Nos. 2, 3 and 4.

rooms there are 25 vertical risers, each consisting of three No. 000 conductors. Each riser extends from the first floor to the fourteenth floor and thus supplies fourteen rooms. One-half of these risers are fed from switchboard No. 1 and the other half from switchboard No. 2. Each riser passes through a cabinet in each of the rooms it serves and is tapped to feed a standard panelboard having a main switch and two or four-plug fused 2-wire branch circuits. Permanent connections are made from the panelboard with No. 10 wire installed in exposed 3/4-in. conduit to 20-amp. and duplex 10-amp. surface receptacles of the polarity type. These receptacles are installed on the walls at a height of 5 ft. above the floor and are spaced

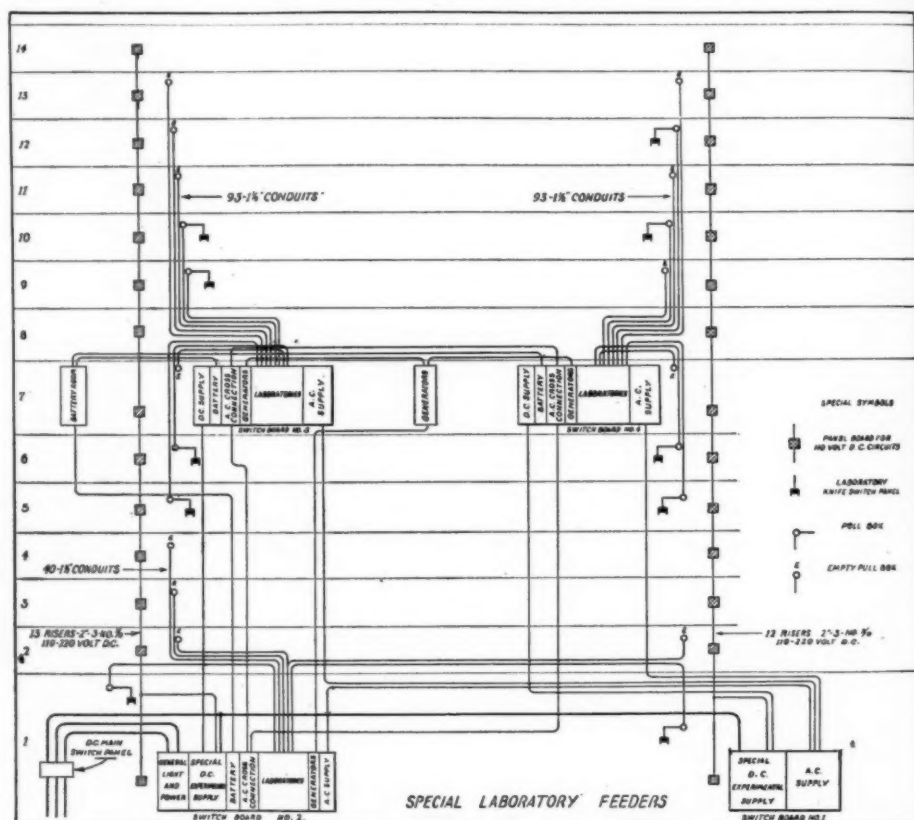


Diagram of Laboratory Feeder System

Battery supply is obtained from sets of cells located in the battery room on the seventh floor. Motor-generator sets are found in the generator room, also on this floor. Both battery and generator supply feed to their respective sections on boards Nos. 2, 3 and 4 where they connect to jacks. By means of flexible cables equipped with plugs at both ends it is made possible to cross-connect one jack with another as demand requires.

To supply direct current at 115-230 volts to the laboratories and research

4 ft. to 6 ft. apart. There are a total of 320 of these experimental d. c. supply panels.

Beside the d. c. 110-volt supply to each room for experimental purposes, it is possible to supply a. c. single phase at 110 or 220 volts, two-phase at 220 volts, any desired d. c. voltage from storage battery, and a. c. at various voltages and frequencies from small motor-generator sets. It is also possible to cross-connect from any room to any other room. For these purposes a separate 1 1/4-in. conduit is installed



to each room from one of the three switchboards, Nos. 2, 3 or 4.

There are 226 of these runs of 1¼-in. conduit, only 108 runs containing six No. 8 wires, each being used at this time. Wires will be pulled in the remaining conduits as the rooms are put into use and the size of wire can be determined. These six wires terminate in each case in six receptacles or jacks on the switchboard, and any desired connection may be made by means of plugs and cross-connecting cables.

Each conduit terminates in a small pull-box located in the ceiling of the room which it serves. In the rooms to which the wires are run at the present time the six wires are carried down in conduit to a small cabinet located on the wall at a convenient height and are there connected to six 60-amp. single-pole cartridge fused knife switches. The bottom of the cabinet is a piece of ebony asbestos in which a hole is drilled opposite to each switch terminal. Temporary connections to experimental apparatus are made by bringing wires up through these holes to the switch terminals which are equipped with wing nuts. In some of the larger rooms two-pole and three-pole surface receptacles are installed in the walls at convenient points and connected to wires run from the cabinet in conduit.

Provision is made for temporary changes or additions by means of sleeves installed in the wall of each room, permitting room-to-room set-ups to be made.

#### Plug Sections of Switchboards

A feature of this installation is the plug sections of switchboard Nos. 2, 3 and 4, by means of which any desired d. c. voltage or a. c. of any voltage and frequency can be supplied to any room in the building, or directly from one switchboard to another. This is accomplished by the following method:

As has been stated, the various laboratories are connected to their corresponding boards, the upper ten floors being taken care of by boards Nos. 3 and 4 which are just alike and the first four floors being accommodated by the connections on board No. 2. These sets of wires, which run in combinations of six, terminate simply in dead receptacles or jacks, adjacent to which are receptacles connected with the various sources of supply. By means of short flexible cables terminating in plugs any

desired combination can be plugged through to any of the rooms by simply inserting the plug in the room jack and the supply jack. Jacks on boards Nos. 2, 3, and 4 are also interconnected by tie-lines. This makes it possible to plug a room connection through one switchboard to either of the others.

#### Conduits Carry Six Wires Each

As stated above, there are 103 conduits each carrying six wires running to the laboratories. The normal carrying capacity is 35 amp. per wire. The battery circuits are No. 10 in 1½-in. conduit, while No. 8 is used to supply the generator voltage to the various boards and is also run in 1½-in. conduit. Ten No. 6 wires run in 2-in. conduit comprise the interconnection system between the various switchboards.

All plugs and jacks used on these switchboards were made especially for this job.

Switchboards Nos. 3 and 4 are identical and are composed of two sections of receptacles, each arranged as follows from left to right.

Laboratory cables  
Generator and battery  
Cross-connecting cable  
Fused a. c. and d. c. supply  
Laboratory cables

Switchboard No. 2 contains one set of these receptacles with the addition of an extra set of cross-connecting cable receptacles. This was necessary, as switchboard No. 2 accommodates the first four floors.

The battery and generator supply was necessary to take care of the special voltages and frequencies needed in the various experimental work. The generous size of conductors results in a very low potential drop which is of particular benefit where the voltage is as low as 1.5 or 2.0 volts.

#### Supports for Laboratory Conduit

All of the conduit work in the laboratories is open and is mounted on the same supports as the gas and water pipes which also run on the walls of the room above the laboratory benches. The design used for these supports is in itself an example of simplicity combined with effectiveness. Two so-called ground strips of wood were installed before the rooms were plastered. Metal strips, suitably drilled, were screwed to these wooden strips and accommodate the various pipes which are secured by means of straps. This method of sup-

port saves the drilling of a large number of holes in the wall and thus cuts down the amount of labor which would otherwise have been required.

The large amount of conduit necessary created a problem of placement in the building. As the floor depths did not allow for placing the conduit therein, it was necessary to run them under the floor slabs. Conduits running parallel to the long dimension of the building were grouped on racks suspended from the hall ceilings in the basement and the seventh floor adjacent to the switchboard rooms. The risers all run exposed and are always grouped as inconspicuously as possible in one corner of the bay against the hall partition wall. Because of the symmetrical arrangement and careful installation concealment of the conduits by a false ceiling was not needed as was thought necessary at first. All elbows were made on the job. Power machines were used for all threading purposes.

#### Exposed Conduit

This exposed conduit work, besides increasing the flexibility and accessibility of the installation, also has the advantage of setting forth to the student an example of mechanical skill.

The lighting system is of the ordinary type and all conduit for this system is concealed entirely. One circuit per two bays with four outlets per circuit is used. Larger rooms have additional circuits, depending upon size. All lighting circuits are 115 volts d. c.

There are three large lecture rooms as well as one small room used for demonstration purposes. In each of these is situated a large laboratory demonstration table 20 ft. 3 in. long and 3 ft. 6 in. wide. Each table has two identical sets of connections for experimental purposes, located on the left and right portions respectively. All connections run to 2-in. asbestos panels. There are ten such sections of panels on each side and they are located on the back side of the lecture table towards the blackboard. These contain 28 connections for the following:

115 volt d. c. through adjustable resistances.  
Resistance A.  
115-230 volts d. c.  
2 phase 220 volts a. c.  
Single phase 110-220 volts a. c.  
Low voltage.  
Ballistic galvanometer.  
Dead beat galvanometer.  
Ammeter.  
Voltmeter.  
115 volt d. c.  
Resistance A.

As will be noticed, the connections for the 115-volt d. c. and the resistance which is marked "A" are located on both ends of the panel, both being connected in parallel.

Eight additional connections are found on each end of the table. Six wires connect with the experimental supply section of one of the switchboards, and two are connections for lanterns. Switches for lecture room lights, for automatic curtain control, for "Univent" heating control and for control of the special system of ventilating ducts and fans, with which each lecture room is supplied, are located on each end as well as on the back of the table, exactly in the center. The low voltage terminal connects to a low voltage potentiometer; the lantern terminals go through special lantern resistance. Resistance "A" connects to adjustable rheostats which provide variation of voltage.

The meter leads run to a large ammeter and voltmeter placed high on the wall above blackboard behind the lecture table and in full view of the entire audience. Galvanometer leads go to the instruments which are located at convenient places in the room. All power leads connect with the controls contained in cabinets directly beneath the blackboard. These cabinets contain a. c. and d. c. power supply as well as special shunts which are used in connection with the ammeter and voltmeter. The power supply is fused to carry 60 amperes.

#### To Laboratory Tables

All wires from these cabinets run to laboratory table in conduit and enter underneath the table on the front side, going to the various connections through channels lined with sheet iron. This arrangement of connections on the table provides for any desired voltages.

The jacks and plugs used on this table were designed and made especially for this job. All of the other equipment on this table is standard material and is an excellent example of a skillful use of stock accessories to an unusual installation.

As in the performance of experiments it is necessary to know the polarity of the d. c. leads, a standard system was decided upon and adopted. Standard Hubbell 10 amp. and 20 amp. polarized outlets were used and so connected everywhere in building that the left connection is positive and the right

connection is negative. As the receptacles in each room are wired on at least two circuits, branching off from 230 volts to 115 volts, the neutral leg being grounded, the grounded wire is the negative on one side of the room and the positive on the other side. Apparatus rooms have special connections for both a. c. and d. c. as well as plug circuits for testing apparatus in stock.

To prevent confusion in the connections of the many circuits between the plug panels and the rooms a carefully worked out scheme of marking was used. Near each set of six plugs on the panels are the room and circuit numbers. The same numbers also appear at the outlet in the room itself. The jacks for cross-connecting between the three switchboards are numbered similarly on each of the boards. Thus, to get from Room 720 to Room 110, the following procedure is necessary:

Jumper connections are made from set of jacks marked 720-A, which are connected to Room 720, to cross-connecting jacks located on same switchboard. Connections from those cross-connecting jacks run to switchboard on basement floor. Thus, when jumpers are placed from cross-connecting set of jacks on the lower board to set of jacks, marked 110-A, which run to Room 110,

the circuit is completed between the two rooms. Other variations are many, such as sending any voltage present on board to any room, and feeding a special voltage generated in special laboratory to other parts of the building.

An idea of the immensity of the job can be seen from the following partial list of material: 67,000 ft. of No. 14; 25,000 ft. of No. 10; 75,000 ft. of No. 8; 30,000 ft. of No. 6; 80,000 ft. of No. 4, and 22,000 ft. of No. 000. There was 28,000 ft. of 1½-in. conduit, 12,000 ft. of ¾-in., and 23,000 ft. of 1¼-in. conduit used. Over 1,300 polarized receptacles were required for the experimental laboratories.

The laboratory has the usual program bell system which is operated from the master system in use throughout the whole campus. A number of "Telechron" clocks, operated on the a. c. circuit, are installed in offices, libraries and laboratories. A standard fire alarm system, manufactured by the Edwards Company, has been installed. The building has two elevators, one with dual control to make the staff independent of the night maintenance force.

The building was used in part only for the 1926 summer session and has been fully occupied since the beginning of the winter session in September.

## Installment Sales Insurance

(Continued from Page 21)

\$50 in five monthly installments of \$10 each would cost \$0.55 for the Protective Guarantee insurance. Or a housewiring job amounting to \$278 to be paid for by \$28 cash and ten monthly installments of \$25 each would cost \$3.25 for the insurance protection.

This Protective Guarantee has many selling points for the electragist in closing contracts with a time payment customer. The customer is considering having his house wired, for example, but will not be ready to have the work start for a month or more. In such case the customer can sign a contract for the work today, although he will not make a payment on the contract until the work is to start. Meanwhile he is given by the electragist a Purchaser's Guarantee Certificate and if he is killed before the work starts the entire bill is paid or if he is disabled by sickness or accident before the work starts each installment on his contract will be paid while he is laid up.

The terms of the Guarantee provide that if the Purchaser be wholly and continuously disabled by sickness or accident for fifteen days or more, all installments accruing during the disability will be paid, fractional parts of months being computed *pro rata*. Or, in case of death from accident, all remaining installments accruing, but not overdue, will be paid in full.

The Purchaser must be in the charge of a regular physician while laid up and payments will be made upon reports from time to time of such physician. Injury or sickness must commence during the period of Guarantee and written notice of disability be filed within reasonable time after its inception.

The Purchaser's Protective Guarantee plan stamps electragists who adopt it as the most progressive contractor-dealers in their communities, and provides a new and powerful sales help in the face of installment selling competition.



# Responsibility of an Employer for Employee Safety

## A Member of the Bar Discusses Court Decisions on Safety Duties of a Contractor, a Sub-Contractor and the Building Owner

By LEO T. PARKER, Attorney-at-Law,  
Cincinnati, Ohio

THE Courts have held on numerous occasions that it is the legal duty of an employer to provide as reasonably safe a place, as the circumstances will permit, for his employees to work. Furthermore, he is legally bound to see that the equipment such as tools, scaffolding, ladders and the like, are free from defects which are likely to cause injury to the workmen who use them.

On the other hand, an employer is not an insurer that injuries will not be sustained by employees, and if it can be proved to the satisfaction of the Court that an injured employee was grossly negligent in not taking the proper precautions to protect himself against injury the employer may not be liable.

Therefore, a contractor who employs men to perform work should, to safeguard himself against liability, exercise reasonable care so that the surroundings do not subject the men to unnecessary dangers.

Furthermore, an employer should exercise ordinary care to furnish tools, machinery and other appliances which are reasonably safe for the men to operate, so that if litigation arises he is safe in assuming that the accident occurred, not because of his negligence, but for other reasons over which he has no control.

### Circumstances

The circumstances under which an accident occurs are carefully considered by the Courts to determine whether or not an employer was in some manner negligent, and liable for damages. In a recently decided case the Court said that to hold an employer responsible for the injuries sustained by an employee the evidence must show that the negligence of the employer was the proximate cause of the injury.

Moreover, the fact that the injury

effecting equipment or tool is simple or complicated is unimportant. For example, in a case where a workman was injured by the head of a hammer which became loosened from the handle, the Court held the employer liable and said that it is the duty of an employer to exercise ordinary care to furnish reasonably safe tools whether the tools are of a simple or complicated nature. The extent of the injury and not the character of the tool was the controlling feature of this case.

### Ordinary Risks

It is a well settled and established rule of the law that a workman is presumed to assume the ordinary and usual risks which are attended with the employment or kind of work he undertakes to perform. And if he receives injuries which occur without negligence on the part of the employer, generally, the employee cannot recover damages. Placing the fault of an accident, very often, is the most difficult procedure of a suit for damages. If an employee is ordinarily careful at the time of an accident a Court may be inclined to render a decision in his favor. For illustration, during a recent damage suit as a result of the injuries sustained by a workman, the Court said that if an employee is careful ordinarily, when an accident occurs, he may have a legal right to ask for compensation from his employer for the injury.

Legally the right of an employee to demand and receive compensation for injuries received while he is engaged in the performance of his duties is based on the long established assumption that where a person must suffer by the wrongful or neglectful acts of another the loss must fall on and be borne by the person whose negligence caused the injury.

The amount of compensation which an employee may receive, when he

proves to the satisfaction of the Court that he deserves a verdict, may be determined by consideration of the seriousness of the injuries sustained; the expenditures which the injured person has had by way of doctor bills, nurses, and medicines; the pain endured; the time which he has lost; and the value of his services.

The long established legal doctrine that a workman cannot recover damages for his own negligence which importantly contributed in producing the injury binds him to the highest degree of caution while attending to the duties of his employer. However, he is expected by the Court to have exercised only the ordinary care and prudence, at the time of an accident, such as would have been exercised by other reasonable prudent average men under the same circumstances.

### Both Negligent

Sometimes it is disclosed that both the employer and the employee are equally guilty of negligence. Under these conditions the employer may be relieved of responsibility. But if the workman is guilty of a slight degree of negligence, compared with the greater degree of negligence, in some manner or other, on the part of the employer, the Courts hold that the employee is entitled to recover compensation for the injuries sustained.

Quite frequently it is extremely difficult to place the responsibility for the injuries sustained by an employee who is employed by a contractor to whom a contract has been sublet.

However, it is well settled that where one person lets a contract to another person to do a certain specified work the main contractor is not liable for accidents, damages or injuries to others by reason of the negligence of the sub-contractor. This is particularly true

if the original and main contractor reserves no control over the manner in which the work shall be performed, except that it shall conform to a specified and agreed standard.

Whether or not a sub-contractor receives compensation in a lump sum, or a commission on the cost of construction, or by weekly payments is immaterial in placing the liability.

An example of this phase of the law is supplied by the records of a recent litigation. A contractor entered into a contract to do specified work and furnish all of the materials. The main contractor sublet the work to another contractor who agreed to employ laborers, superintend the construction and see that the work was completed in accordance with the plans. The sub-contractor was to receive a stipulated amount of money for each week's work, and dependent upon the number of men who were employed by him. A man, not connected with the constructional work, was injured through the negligence of one of the workmen who was employed by the sub-contractor. The Court held that the sub-contractor alone was liable for the damages.

#### When Owner Lets

Another important phase of the liability situation is where a person or workman is injured on a job that is let to a contractor by the owner.

Probably a review of a recently decided case, which involved this point, will impart valuable knowledge, with respect to the liability of the parties under these conditions:

An owner entered into a contract with a contractor for the construction of a certain factory building. It was agreed that the contractor was to perform all of the work according to the plans and specifications. Further, the contractor was to furnish all the required materials as well as the equipment which included scaffolding, shovels, wheelbarrows, tools and other apparatus to be used by the workmen. The contract read that the contractor was to receive a stated amount of money each week, in addition to which he was to be paid a stipulated remuneration for the use of a machine for mixing concrete. The contractor hired all of the workmen and gave orders to the men as to what they should do and how it should be done. Also, he made out a weekly payroll which he presented to

the owner, and received from him the money needed to pay the men. However, the owner was about the building practically every day during its construction and conferred with the contractor regarding the plans and specifications. The owner never exerted any control over the men, except when certain windows were improperly installed. The windows were changed at the request of the owner who discharged the unsatisfactory workmen. Both of these incidents occurred when the job was nearly completed, but the owner established the fact that he was acting under the direction of the contractor when the workmen were discharged. Later a laborer was injured and suit was instituted against the owner for damages. The Court held the owner not liable

because of the proven fact that the contractor was employed to accomplish the construction of the building and, further, because the owner had no actual control over the men.

In another case where it was shown to the satisfaction of the Court that an owner employed a contractor; paid the employees; hired and fired the workmen, when he desired, and in other instances permitted the contractor to do so, the Court held the owner responsible for the damages.

In other words, where it is established that a contractor has full control over his men, that is, if he hires and pays them, and assumes the exclusive right to hire and discharge them, then the contractor himself, and not the owner is responsible for damages.

### Labor Costs on High School

(Continued from Page 24)

concrete wall for 2/3-hp. air-compressor, installed and connected complete 10  
Setting five Sundh No. 7,600 three-pole solenoid remote control starters for seven-hp. motors in cabinets with knife switches 30  
Connecting up five solenoid switches and knife switches mentioned above and five seven-hp. motors 38  
This allows 13.6 hours for wiring up to each motor and remote control starter, including installation of starters  
Setting five safety switches, 30-amp. three pole 6  
Connecting up five safety type knife switches and five two-hp. motors which allows 2.8 hours for connecting up each motor and setting and connecting up each safety switch 8  
Wiring up to two five-hp. motors and setting line switches in cabinets and connecting them up complete, including setting float switches and automatic switches 44  
Five three-pole 100 amp. knife switches each in an iron cabinet set and connections made complete 14  
Six small two-hp. motors, connected complete 40  
Four three-hp. motors set and a control cabinet having four three-pole, 30-amp. knife switches mounted in it, erected and connected up complete 34  
A 15-hp. and a 5-hp. motor complete with compensator switches, wired up and compensators and switches set in 72  
In addition to the above time allotted to each item there were 42 man hours required for oiling motors, installing fuses, testing and changing direction of motors, etc., which is an increase of 17 percent, which should be added to each item to make them complete 42

There is an item of 2,250 feet of No. 14 four conductor lead cable installed in 122 man hours. This cable connected the fire alarm box in the school building with the city alarm system and had to be pulled into the subway duct system and extended to the nearest city alarm box which was located on a pole, five city blocks from the building. The complete labor involved consisted of opening seven manhole covers in streets, and all ducts between manholes had to be fished, as there was no drag wire in the ducts. Then the cable was pulled in and connected at the box for fire alarm in the school building.

Sufficient slack cable was left at the fire alarm pole for connection by the fire department, and manhole covers were replaced. The total run was 2,100 feet between manholes and 150 feet between the school building and the first manhole. The cable was pulled into the ducts in two sections so it was necessary to make one splice in one manhole. The total time for completing the work was 54.3 hours per 1,000 ft.

The general contractor on this building was very efficient and due to the extensive area available for working no time was lost waiting on other trades. If it had been necessary to employ more than one team for roughing, the non-productive labor would have been greater and the average amount of conduit installed would have been less.



# Red Seal



© S.E.D.

# Progress

**T**HE most important development of the month in Red Seal activities is the announcement by several leagues that they are revising their specifications so as not to require ceiling outlets in living rooms and bedrooms. This is a follow-up on the decision of the Red Seal conference at Association Island in September that insistence on ceiling fixtures in these rooms was retarding the spread of the Red Seal.

It was recognized that many people do not care for ceiling fixtures in these rooms, preferring the wall brackets because of the artistic and decorative effects obtained by their use. The changes permitted in the specifications provides that when the ceiling outlet is omitted the number of wall brackets shall be increased proportionately. Formerly, when a Red Seal customer did not wish to have a ceiling fixture in these rooms, the contractor got around the point by capping the outlet. The expense of wiring to this outlet will now be eliminated.

While it is true that this gives greater leeway in meeting the wishes of the public, it does not mean, the Society for Electrical Development points out, that contractors should not try to sell ceiling outlets and that the opinion of a portion of the public does not indicate that ceiling fixtures are not the best for general lighting.

Another fact pointed out by the S. E. D. is that this change in specifications is entirely up to the judgment of any league operating the plan. If it is still desired to insist upon the ceiling fixture for its local Red Seal houses, the league is free to do so.

## Total Awards

The total number of Red Seal awards made or pending in the United States, up to November 15, is reported by the S. E. D. as 2,301. Of these the State of California has 406, while the Electric League of Pittsburgh has a total of 326. Other leagues that are making a fine showing are Rochester with 204, Niagara Frontier with 143, Detroit with 258, Hudson Valley with 129 and Atlanta with 209.

Two more licenses were issued during November, one to the Lake County Electric League with headquarters at Waukegan, Ill., and the other to the Electric League of Scranton, Pa. The population reached by the Lake County league is 35,000 and that reached by the Scranton league is 310,000. The total population now in Red Seal territory is 15,175,203.

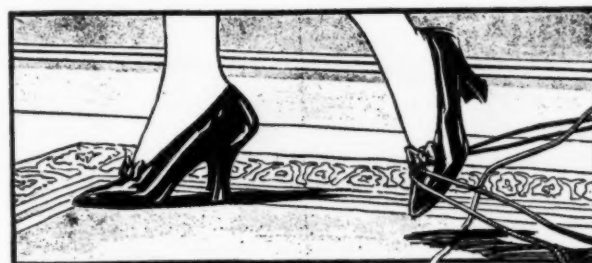
An application for license has been filed by the Electrical Development Club of Greater Muskegon, Muskegon, Mich., and the following leagues have signified their intentions of applying in the near future: Metropolitan Electrical League of Boston, Electric League of Washington, D. C., and Electric League of Easton, Pa.

The last few months have seen the development of the Red Seal from a single-family dwelling proposition to one that is influencing a growing num-

ber of apartment house builders. In the Niagara Frontier territory one 24-apartment building and one four-apartment building are Red Seal, Detroit has twelve duplex Red Seal houses and Chicago already has one. Atlanta has just announced a Red Seal application for a 28-family apartment, which will be unique in Red Seal history in that each apartment will be a separate home with a separate entrance and each will receive an individual Red Seal certificate. And Los Angeles now has a building containing 152 apartments, all Red Seal.

Toronto, the birthplace of Red Seal, has extended the operation of its plan to include the border cities, Windsor, Walkerville, Ford, Sandwich and Ojibway. Another extension of the Toronto league's activities is the publication of a "Red Seal Monthly" to go to architects, builders and owners.

The Graybar Electric Company has supported the Red Seal Plan strongly from its inception and last summer started the publication of a series of Red Seal advertisements, paid for out of its own funds. This is the second of the series and is scheduled to appear during the next sixty days in newspapers wherever the Red Seal Plan is in operation. The last paragraph of this advertisement, it will be noted, advises consultation with a reliable electrical contractor.



*This wouldn't happen  
in a Red Seal house*



The Symbol of Adequate Wiring.  
Copyright, 1915, by The Society  
for Electrical Development, Inc.  
The Red Seal is a sign that con-  
struction want to get at your house  
because it says "This house is well  
wired for every electrical comfort,  
according to the Red Seal Plan estab-  
lished by the Society for Electrical  
Development."



The Graybar goal  
is to supply every  
electrical  
supply and shop.

ALL the comforts of home need not include trailing wires to catch a passing foot. They won't in a Red Seal home.

Simply because such homes are built to Red Seal standards—standards that protect you from too much and unnecessary wiring while they guarantee for you all the electrical convenience features you need.

Enough convenience outlets properly placed, for one thing. Enough lighting fixtures—enough switches—enough of everything electrical for home comfort and convenience.

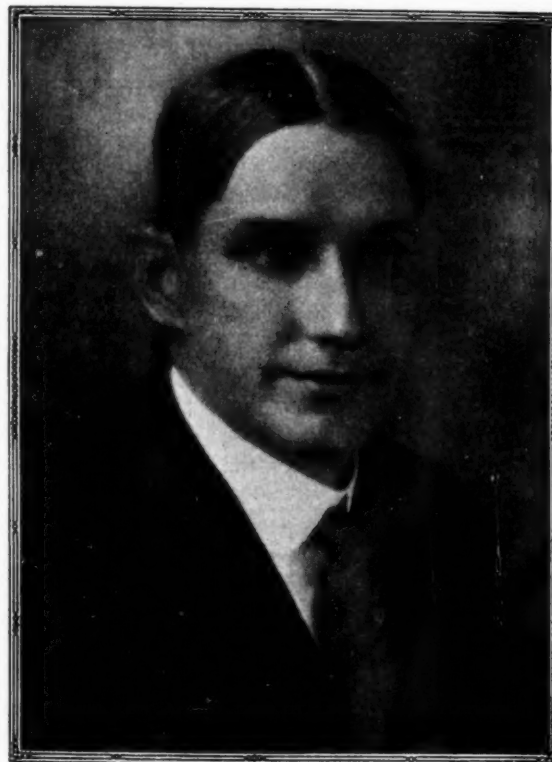
Put it up to a reliable contractor or the local electrical league to provide you with a Red Seal house.

# Graybar

ELECTRICAL SUPPLIES—WHOLESALE ONLY  
Successor to Western Electric Supply Dept.

### A. C. Brueckmann, Baltimore

**A.** C. BRUECKMANN, recently appointed executive committeeman of the Association of Electragists, International, from the Eastern Division, was born in Savannah, Ga., in 1884, and was raised in the South. He was orphaned at the age of nine and three years later started to work. He did not neglect his education, however, and, working by day, finished his schooling by night. His first contact with the industry in which he was to carve a prominent place for himself took place in 1900, when he was sixteen years old. He started as an electrical apprentice in the days when electricity was just beginning to discard such swaddling clothes as wooden cutouts and wooden sockets and when steel conduit was still a novelty. After four years of apprenticeship in Savannah, he migrated to Baltimore and secured employment as a journeyman. Three years later he had become chief engineer for one of the largest contractors in Maryland. It was not until 1915, however, that he considered establishing his own business but as soon as he did take the step the value of his years of experience showed itself. From the very first his company met with success and has since been among the foremost in this branch of the industry in Maryland. This, perhaps, is because, also from the very start, Mr. Brueckmann has sought only those clients who want the very highest grade of workmanship and material. As may be judged from his appointment as executive committeeman, Mr. Brueckmann has been particularly active in association and civic work. He is president of both the Maryland Section of Electragists and of the Institute of Electrical Contractors of Maryland; and he is chairman of both the Electrical Conference on Code for Maryland and of the Joint Electrical Labor Board.



## Electragists You Should Know

### John S. Musser, Harrisburg



**F**ORTUNATELY for the electrical contracting field, John S. Musser changed residences frequently during the late 'nineties. For, as he relates, every time he changed his address he changed his business. This continued until 1901, when he arrived in Harrisburg, Pa., and in the electrical business simultaneously. Previously he had been an upholsterer, a lawyer, and a farmer, and had been successful in each capacity. A three-year illness preceded his move to Harrisburg, where he was offered the managership of the local store of the Arrowsmith Electric Company, a chain-store company. He accepted, and continued in this position until 1907, when the holding company got into financial difficulties. The rest of the chain was closed down and after a few months the stockholders decided to sell the Harrisburg establishment, which was still operating successfully, to Mr. Musser. This led to the formation of Mr. Musser's present company, the Dauphin Electrical Supplies Company, which now has a nineteen-year record of success. Mr. Musser holds the position of president and general manager. The business has two departments, jobbing and construction, the latter having handled many of the large construction jobs in central Pennsylvania. In addition to being an electrical contractor of note, Mr. Musser is a figure in the financial and social circles of his community, and is regarded as one of the town's leading citizens. He is a past president of the Rotary Club of Harrisburg and a member of the Harrisburg Chamber of Commerce, the Harrisburg Electrical Association, the Pennsylvania State Association of Electrical Contractors and Dealers, and has been a staunch member of the Association of Electragists, International, for many years. And, despite his fifty-two years in the several businesses described, he is still as active as the youngest business man in town.



# Central Stations and Dealers Must Co-Operate on Merchandising\*

**The California Electragists Here Offer a Plan for Merchandising Teamwork, Whereby the Central Station Can Build Up Its Load and the Dealer Can Build Up His Profits**

By O. N. ROBERTSON

Chairman, Merchandising Section, California Electragists, Southern Division

THE need of the hour for the electrical industry is more sales volume in electrical current-consuming devices. We are faced today for the first time with the fact that power companies have more kilowatt-hours to dispense to the consumer than they ever have had before and throughout the country today more interest is being taken in developing highly trained organizations for the purpose of acquiring new business at almost any price. Therefore, the Electragist merchandisers of California through their organizations are presenting this report as a constructive help in solving this problem confronting the industry today.

## A New Era

It is quite apparent, as we see it, that in the development of the central station and the electrical business as well, there was first an era of pioneering. Now we are in an era of expansion of lines and equipment, of consolidation, and of restricting expenses, to meet the present load demand. In the near future we shall have the era of merchandising. Are we going to be ready for it? What are we going to do to be organized and ready to promote and maintain the era of merchandising that is to come? Those who have watched the trade magazines have become impressed with the large amount of open territory available for the sale of current-consuming devices. The most popular appliance we have today, the one which we think least of, and yet it would be hardest to deprive a housewife of, the flatiron, is yet to be sold to 30 percent of the market of the United States. In California the market is supplied practically 100 percent. The next popular appliance, the toaster, is used in only 27 percent of the homes.

When we get on down to the larger current-consuming devices, such as refrigerators, ironers and electric ranges, only one-half of one percent to three percent of the markets are supplied. The mountain is gigantic. It will take years to tear it down to a flat plain. We can never attempt to scale the mountain

A SOUND industry-wide merchandising policy is today one of the great needs of the electrical field and, generally speaking, the central station has been devoting more thought to merchandising than the contractor-dealer has. But the contractor-dealer must be taken into consideration and here is one of the most thorough expressions of his views and aims in merchandising. Mr. Robertson presents the problem in California and proposes a solution, a plan, that the central stations of that state will be asked to co-operate on. The plan, though proposed for only a single state, could well be national in its application and its adoption, at least in its fundamentals, would mark real progress toward making the industry a harmonious whole.—The Editor.

or go into its depths unless we have organized effort on the part of manufacturers, central station, jobbers, and the dealers.

Yet we are faced with this proposition, and every one is familiar from experience with what we want to say. It is a known fact that the dealer department of a contractor-dealer's business has never been able, except in a few isolated cases, to make a profit or even break even after the year's work is counted and the cost scrutinized.

There is, therefore, a gap which seems impossible to jump, under present economic conditions, between

the list price, or the price received for current consuming devices, and the cost of the article plus the sales and overhead expense involved in making a sale.

## A Way Out

What are we going to do to pioneer our electrical merchandise in order to sell the consumer properly; in order to make a return on our investment, whether it be a power company's money or a dealer's money; to bridge this apparent impossible gap? Shall we raise the list price of an article? All hard-hearted business men know how volume decreases when a price is raised. What will make it possible to gain these objectives mentioned and give increased volume of business to the manufacturer, the jobber, the dealer, and to increase year after year the volume of electricity sold?

We believe that there is a way out which is being tried and successfully followed in one form or another by many companies throughout the country. It is only necessary to read the trade magazines to find out many of these plans that are followed by broad-minded central station merchandisers.

We feel that a plan whereby closer teamwork can be gained from a dealer, who is coming more and more to be recognized as a logical outlet for merchandise, should be considered.

As the national Electragists have created and put into effect and proved the economic necessity of a policy of distributing all electrical merchandise from manufacturer to jobber, to contractor-dealer, to consumers, we therefore enunciate the following fundamental merchandising plan to be used in any district in California, a plan which contemplates the sale of all current-consuming devices through the dealer. We choose to call it the "Through-the-Dealer Sales Plan."

We believe this plan to be a sound

\*Abstracted from Report of Merchandising Section, California Electragists, at Del Monte Convention, October, 1926.

economic policy for the distribution of current-consuming devices to the consumer; a policy which will take up the gap apparently impossible to overcome in any other way, between the cost of selling, either by the central station or the Electragist dealer, and the retail price obtained.

We mean by this "Through-the-Dealer Sales Plan" that all lamp-socket appliances and heavy duty appliances shall be sold through the dealer, preferably at manufacturers' list prices.

#### Details of Plan

This plan contemplates, in brief, the purchase by the power company of campaign articles of reputable competitive make, and placing them in the dealer's place of business, on consignment, at a price that will allow the dealer a fair margin in selling to the consumer in his store. The power company's position is to advertise and promote these sales through demonstrations, displays, broadsides in monthly bills, and other mediums of sales promotion. The demonstration and creation of consumer demand for the appliances, which, years after they are sold will continue to bring revenue to the power company even after the loss or gain is forgotten by a dealer, are most important items to consider. Time payment or terms on all goods must be the same as good business judgment permits, but should be an item to entice the purchase of such goods. It would be a benefit to the entire industry if the financing of time payment contracts could be handled in conjunction with the power company policy. We must remember in the offering of time payments as an aid to volume of sales the timely word of caution by Roger Babson against too long extension of credit to pay, when he says: "The time payment method of paying for merchandise is the one economic factor that is gnawing at the vitals of American business today, and sooner or later, must come to some adjustment to insure continued prosperity for our nation's business."

It is expected, and is evident to all merchandisers, that when campaign articles are being advertised and sold, forty to fifty per cent, even more, of the volume of sales at least, will be of a nationally advertised line, which of course is carried in stock normally by dealers, and sold at nationally advertised prices.

In the case of overstock on articles sold at campaign prices, or obsolescence, special prices can be arranged on such merchandise through team work with power companies and dealers in various districts, making it possible for each dealer to sell the same thing at the same time, thereby keeping the stock of campaign appliances clean.

#### Heavy Duty Appliances

In the case of heavy duty appliances where campaigning is necessary, and it is necessary continuously, either on a price basis, demonstration, or advertising basis, the power company may buy them, place them in the dealer's store on consignment, say, one to each enterprising dealer, with all sales to be made through the dealer. Of course the more progressive dealers can purchase a larger stock of ranges or appliances through the regular jobbing channel. This makes it easier to sell the consumers as a better variety of models will be available to choose from. It is not considered necessary for the central station to act as a handling agent, only as local conditions might dictate. Those eligible to participate under this plan are contractor-dealers or merchants who have maintained inside wiring departments capable of wiring and installing any of these appliances and later giving any proper service that may be necessary.

This plan contemplates the power company having salesmen out over their territory promoting the sale of these appliances as well as the dealer.

#### Central Station Merchandising

If the power company in a larger city wishes to maintain and operate an aggressive merchandising department, should it not be operated as a separate organization doing business on a strictly merchandising basis, buying and handling its own stock, doing its own financing, and handling its own accounts with customers?

There are many obvious advantages to this whole plan, though on first thought a number of objections may arise, but an honest and careful analysis, as we have given it, will prove its many advantages to the power company. It will be possible to sell better appliances, render a more complete and satisfactory service to a consumer, and encourage the use of electricity. It will keep in the hands of the power company, which no doubt is most in-

terested, the control of consumer contact. The quality of merchandise sold to the consumer can largely be controlled; domestic and commercial equipment can more properly be displayed and promoted. We can participate then, as all working on one side, instead of a dealer selling as a competitor to the central station, which never has worked out as an economic success. It will encourage continuous education, but all along one definite line, which is the most vital necessity in the electrical business today. It will not leave in the hands of the power company merchandising managers a large stock of merchandise that is becoming obsolete. An additional big advantage to the power companies is that they will not have term accounts as accounts receivable with customers which have to be collected by the usual high pressure methods necessary in collecting overdue accounts; no reserve for bad debts, no disgruntled customers. It will mean that the dealer will be encouraged with a return for his efforts, as against receiving no encouragement, with no return for his efforts. It will place good will, public contact, and the domestic load of the power company in synchronism with the progress of our industry and the complete, whole-hearted good will of dealers and workmen throughout its territory.

#### Aiding the Dealer

To the dealer it means an awakening to the profitable selling before him of electrical appliances, sold through that outlet that really can give a satisfactory service. It will mean added impetus to the promotion of the Red Seal Home, for a contractor-dealer can better see the return for his efforts in direct sales. They can continue in the business of giving service to the consumer, and by so doing will cement closer relations between themselves and the industry. Naturally, it will ferret out those who will work from those who won't. We believe it will lead to this ultimate result as an accomplishment, as James E. Davidson, past president of the N.E.L.A., says that "What the household wants from the power companies is not raw kilowatt-hours, but help in washing, ironing, refrigerating, cooking, heating, cooling, lighting and so on—human service that can only be rendered when appliances are installed."



# Scope and Plan of Electragist Wiring Standards

The committee set up by the Association of Electragists to develop Electragist Standards for Wiring Installations has had two meetings this Fall. Remarkable progress has been made for it has been possible to consider a means of detail and discard the unessential and then quickly get down to a basis of action.

From the second meeting, held on November 13, there has come a fairly comprehensive statement of the scope and plan of the work.

It will be noticed that the committee is not going to be content with anything but the most thorough job. The committee is even going so far as to work out the nomenclature for wiring systems, something which has been needed for many years.

These standards will combine both quantity and quality to the end that the public will receive the greatest value per dollar of costs. The committee is to be congratulated on its accomplishment to date.—The Editor.

## Section I—Purpose

THE fact is very generally recognized by all branches of the electrical industry that heretofore no standards for wiring installations have existed which have adequately defined what constituted the best practice in such installations under any and all conditions.

There are two electrical codes today: The National Electrical Safety Code, which is designed to insure safety to life, and the National Electrical Code, which provides minimum requirements for safety against fire risk. These codes are necessarily minimum standards for protection and cannot cover all the other considerations which are involved in best practice.

### An Example

To take a very obvious example, an installation of wiring to supply a motor may comply with all requirements of the National Electrical Safety Code and of the National Electrical Code, that is, it may be as safe as such an installation can be made, as regards life and fire risk, but at the same time the motor may be totally inoperative on account of excessive voltage drop. In other words, the wiring installation is totally inadequate and practically valueless, even though the two standards named above have been fully complied with.

It is the purpose therefore of the Electragist Standards for Wiring Installations to define what constitutes best practice in wiring installations.

In determining what constitutes best practice, the considerations involved are those of safety to life and property, permanency, adequacy, efficiency and economy of operation, with proper regard for cost. Safety to life and property must always be assured. The degree of permanency and adequacy and the cost of the installation must in every case be commensurate with the character of the building structure, the character of the occupancy of the building and the character of the service to be provided by the wiring installation.

As a definition of good practice then the Electragist Standards will include the engineering design of installations, the definition of the types of wiring which are suitable for use under various conditions, and specifications for materials and apparatus and the methods of installing the materials and apparatus.

### Best Practice

It should be clearly understood that "best practice" cannot be assumed to mean the most costly wiring installation in every case; the end to be sought is an installation having a sound investment value. Certain conditions exist which call for comparatively inexpensive wiring installations; in some few instances the conditions dictate the use of mater-

ials and types of wiring which are of the highest quality obtainable at any price; while in the great majority of installations the proper balance between cost and true value is secured by employing materials and installation methods which are by no means the cheapest but at the same time are not the most costly, and by engineering design which provides adequacy without waste or extravagance.

It is not the purpose of the Electragist Standards to set up new standards of any nature where satisfactory standards have already been established by other agencies.

### The Basis

"Definitions and Nomenclature" are as far as possible based upon the Standardization Rules of the American Institute of Electrical Engineers, the National Electrical Code, the National Electrical Safety Code, and other authorities.

Wherever satisfactory standards for materials, apparatus or installation methods have been adopted as American Engineering Standards by the American Engineering Standards Committee or have been established by the National Electrical Manufacturers' Association, such standards will be incorporated.

No provisions of the Electragist Standards will be in conflict with the National Electrical Code. Code rules

will not be repeated, but it is to be understood that in order that an installation may be in accordance with the Electragist Standards, all requirements of the National Electrical Code must be complied with.

## Section II—Definitions and Nomenclature

and

## Section III—Engineering Design of Installations

The engineering design of an installation consists of the determination of certain elements, some of which are as follows:

1. Number of outlets per unit of area or per unit of lineal distance.
2. Capacity of outlets.
3. Means of control of outlets.
4. Capacity of branch circuits (watts per unit of area or lineal distance.)
5. Voltage drop on branch circuits.
6. Provision for additional branch circuits.
7. Flexibility of branch circuit and outlet installations.
8. Capacity of feeders and sub-feeders.
9. Voltage Drop on feeders and sub-feeders.
10. Demand factors applying to feeders, sub-feeders and entire installation.
11. Provision for additional feeders and sub-feeders and provision for increasing the size of feeders and sub-feeders.
12. Capacity of service equipment.
13. Provision for increasing the capacity of service equipment.

The specifications will in general be confined to *construction* and will not deal with *utilization equipment* except in regard to methods of installing such equipment. In power installations the selection of suitable motor types and sizes and types of control to meet given conditions may be properly considered under the heading of adequacy. In lighting installations the selection of suitable lighting equipment is an important consideration in determining adequacy. However, both of these subjects will be omitted from the Standards at the present time.

Determination of adequacy of installations in house wiring is being developed nationally and locally through the Red Seal plan by the Society for Electrical Development and local electrical leagues, and the Electragist Standards will recommend the adoption wherever possible of such Red Seal house wiring specifications as part of these Standards.

## Section IV—Definition of the Types of Wiring Required Under Given Conditions of Building Construction, Building Occupancy and Service

This section will state what types of wiring, i. e., what materials, apparatus, and construction methods will be used:

(A) in buildings of every type of construction; (B) to meet special conditions of occupancy of a building; (C) to meet special conditions of service.

A—Requirements to meet different types of building construction.

B—Occupancy Requirements, such as

1. Theatres and Motion Picture Houses
2. Motion Picture Studios
3. Garages
4. Refrigeration Plants
5. Laboratories
6. Tanneries
7. Farm Buildings
8. Extra Hazardous Locations
9. Central and Sub-Stations

C—Service Requirements

1. Services
2. Underground Work
3. Grounding
4. Insulation Resistance
5. Motion Picture Projectors
6. Signs
7. Outline Lighting
8. Temporary Work
9. Over 600 Volts
10. Small Low-Voltage Isolated Plants
11. Organs
12. Signal Systems
13. Radio

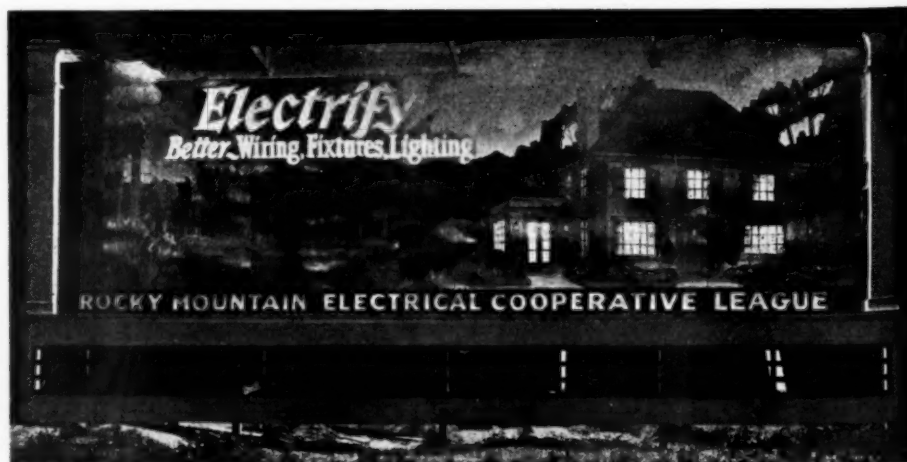
## Section V—Specifications for Materials and Apparatus and Specifications for the Installation of Materials and Apparatus

This section will cover such standard wiring materials and apparatus as may be used under the Electragist Standards.

Under each classification, specifications will be given first for the *material or apparatus itself*, and second, for the *methods of installing* the material or apparatus.

1. General
2. Insulated Conductors
3. Bare Conductors
4. Conduit
5. Armored Cable
6. Metal Raceway
7. Outlet Boxes
8. Open Wiring
9. Underfloor Duct
10. Conduo-Base
11. Cabinets, Cutout Boxes and Pull Boxes
12. Fuses
13. Circuit Breakers and Relays
14. Switches
15. Panelboards
16. Switchboards
17. Plug Receptacles
18. Fixtures, Sockets and Lamp Receptacles
19. Lamps
20. Generators
21. Motors, Control Apparatus and Motor Protection
22. Cranes and Hoists
23. Elevators
24. Transformers
25. Electrically Heated Apparatus
26. Resistance Devices
27. Storage Batteries
28. Lightning Arresters
29. Pole Lines

## Salt Lake City Has Electric Sign to Push Electricity



Salt Lake Electrical Men Believe in Electrical Publicity, as Proved by This Illuminated Bulletin Board



# Chats on the National Electrical Code

*A Monthly Discussion of Wiring Practice and Questions of Interpretation,  
Presented with a View Toward Encouraging a Better Understanding of the In-  
dustry's Most Important Set of Rules*

By J. C. FORSYTH

Supervising Engineer, Bureau of Electricity, N. Y. Board of Fire Underwriters

## Grounding of Appliances

To what extent should the grounding of the metal parts of appliances be made compulsory? Should it be required under all conditions or only in specific cases? Instances of injuries and fatalities are being reported from many sections of the country both in the household and in industrial plants. Can these accidents be eliminated or their number reduced? If so is it not the duty of the electrical industry, including the rule making bodies and the inspection authorities, to give it serious attention?

It is proposed to require a "third" wire in all two-wire leads to portable devices and connected at the supply end to a three-pole polarized attachment plug. This third wire is to be a grounding wire and attached to the outlet box or fitting at one end and secured to the metal frame of the device at the other. It is common knowledge that such polarized plugs are now ready to be placed on the market. Let us see what this arrangement would mean if it were to be made effective.

It would mean a three in place of a two-wire cord or cable to all appliances and a three-pole attachment receptacle and plug. Even if this third wire is not required to have as much insulation as the other conductors the finished cord would necessarily be larger and less flexible. It is a constant fight now to get portable cords that comply with present standards because of their size and appearance, especially when connected to many types of small devices. It would mean that the attachment plug would need to be so constructed (1) that no reversal of polarity would be possible, (2) that the grounding of the metal raceway of whatever type would be more carefully carried out and (3) that frequent inspections could be made of all appliances to determine whether or not the ground wire

from the outlet to the portable appliance was intact and properly connected. It would mean that where any form of wiring construction other than metal was employed that special ground wires would have to be installed and suitable connections made to all appliance outlets. All these and perhaps more would be necessary if the public is not to be given a false sense of security.

Would not a simpler, more economical and more efficient method be first to ground the system as is now required; second, polarize the wiring, fixtures, sockets as is also now required; third, use a two-pole polarized attachment plug and receptacle, and, fourth, connect the grounded wire of the circuit direct to the metal frame work of the device. By this method the only change from present rules and best practice would be the manufacture and use of a polarized plug. Inspection and installation difficulties would be met with in either method, but they are not insurmountable. It might be well not to try to take this entire matter in one "bite," but for a beginning to make it applicable only to certain clearly defined conditions. This method would necessitate a few changes in the Code, but Article 9 Committee might be able to present the necessary modifications to cover this matter if it is thought to be advisable at this time.

According to current reports from several sections of the country this subject is being freely discussed and it would seem that some definite action should be undertaken very soon.

## Switches and Fuses on Switchboards and Panelboards

Many disputes have arisen between contractors and inspection departments regarding the relative position of switches and fuses on panel and switchboards. So far as the Code deals with this subject the fuses may be between

the busbars and the switches or between the switches and the circuits, which is to say that the switches may also be in either relation to the busbars and circuits.

But there is this provision, that when the branch switches are between the fuses and the busbars the connections shall be so arranged that the blades will be dead when the switches are open. If you will note, this restriction is limited in its application to branch switches only thus by inference permitting either arrangement desired for switches and fuses of all other sizes; and this holds good for switchboards as well as panelboards. Rule 1203-b states that "when practicable switches shall be so wired that blades will be dead when the switch is open." This rule is often quoted as requiring that all switches must be so wired, but in the first place the rule makes it mandatory only when "practicable" and if you have ever "listened in" during a discussion between a contractor and an inspector as to when anything is practicable or not you will perhaps realize the difficulty the inspection department has to contend with in attempting to enforce any rule so vaguely and indefinitely expressed; and in the second place this rule applies to the installation of individual switches only and not to groups of switches, nor is there any statement in this rule concerning the relative arrangement of switches and fuses.

## Screw Shell Receptacles

The inquiry is frequently made as to whether or not there is any rule in the Code regarding the placing of screw shell receptacles in baseboards. The answer is Rule 1404, paragraph 0, reading as follows: "Receptacles of the Edison base type shall be located not less than 4 ft. from the floor unless for use as lamp holding devices." The

idea in the framing of this rule was to prevent accidents to children. Several cases of injuries were cited where metal toys were inserted in the open receptacles. But the 4 ft. limit does not seem wholly adequate and could be increased to 6 ft. without entailing any hardship; or, this type of receptacle might be eliminated altogether except for use as a lamp holding device.

#### Lightning Discharges and Electrical Fires

Is there any direct connection or relationship between lightning discharges and the start of fires from electric wiring? Can it be proven that a higher potential than is employed on the lighting circuit is induced in the wiring of a building by lightning discharges? The following is a statement of facts and anyone can draw their own conclusions.

On August 12 and 14, 1926, there occurred two quite severe storms in New York City, each of which lasted approximately forty-five minutes. In the total period of an hour and a half there occurred twenty-one electrical fires.

While we do have fires of electrical origin occasionally, yet to call out the Fire Department twenty-one times in an hour and a half for this cause is—well it is likely to create considerable congestion in street traffic. But these twenty-one fires were investigated and were found to have been of electrical origin.

#### Classification of Fuses

Is a new class of fuses and fuse bases necessary or desirable? Many are of the opinion that the present classification of 0 to 30 amp. presents an entirely too wide a range for the interchangeability of fuses of these values. Since the Code does not permit the use of fuses of over 15 amp. capacity on the final branch circuit it is argued with considerable show of reason that fuses of larger size should not be available for this service.

The average person has little knowledge as to the real meaning of the numbers on fuse casings. At the hardware or ten-cent stores where fuses are generally sold today it will be found that neither the customer nor the clerks know what the markings are for, but the customer is usually advised to take

the fuses with the higher ratings, as they will "hold" more electricity than the others.

It is only reasonable to suppose that if the fuse base will not receive a fuse of a higher rating than 15 amp. that only fuses which fit the base will be inserted and, therefore, the circuit and the devices connected to it will be reasonably protected. These fuses will be no more liable to misuse by the householder or occupant of a store or shop than the present 0 to 30 amp. type.

On the other hand, to require another classification would mean that two sizes of fuse bases and panelboard spacings would have to be manufactured, handled and stocked instead of one as at present. It would cause considerable confusion and difficulty until everyone in the electrical industry had become thoroughly accustomed to the new divisions in this class; but I think that in time it would result in better fuse protection for branch circuits.

#### Supporting Switch Boxes

We do not accept wooden lath as a suitable support for outlet boxes. In buildings of other than fire resistive type all outlet boxes or plates should be mounted on "cross strips" nailed to floor beams unless they are secured direct to the beams by at least two screws or unless some approved form of support is provided. It should be borne in mind that these boxes are, in most cases, the only support for the fixture, and when the lamps are controlled by key or pull chain sockets there is frequently sufficient strain put on the fixture to loosen the box or plate. This trouble is not so apparent with switch boxes, as the supporting screws are smaller and not so likely to split the lath and the lath itself can be brought well under the ear of the box. There is relatively little strain on a switch box and the plaster usually prevents any shifting of position in the wall. The box is still further reinforced by the face plate. A great deal, however, depends on the character of workmanship on the job.

#### Automatic and Manual Fire Alarm Equipments

As many inquiries are received from electrical contractors regarding this subject, a brief statement in reference to it may be of some interest. Installa-

tions of fire alarm systems, either automatic or manual, in any building, except in so far as they may affect the fire hazard, are not approved no matter how perfect the devices or materials may be, nor how well the mechanical execution of the work has been performed, unless the system is supervised by and all signals received at an approved fire alarm central station, from which fire alarm signals can be transmitted direct to fire alarm headquarters over at least two separate and independent lines. In other words, a purely local fire alarm system is not recognized as sufficiently dependable to warrant approval. There are several things which stand out in a fire alarm equipment, other than the installation itself, and which are of vital importance.

- 1.—Supervision: Who is responsible for the maintenance of the system and how is the ability of the equipment to function under all conditions of service to be guaranteed. This supervision if satisfactory cannot be limited to working hours, but must be continuous and must under normal operation be ready to respond every day of the year and every minute of every hour day or night.
- 2.—Disposition of signals: The sounding of a fire alarm signal in a vacant engineroom is not of any value. To be worth while every signal for actual fire should be transmitted to and recorded at an approved central location at which there are trained attendants constantly on duty to observe the receipt of signals and act upon them immediately and in a predetermined manner.
- 3.—Response to signals: A signal is of no value in and of itself. It has no significance unless those who hear it can interpret the alarm into action. There must be, therefore, an adequate, properly equipped, well organized and disciplined force ready at all times to respond to all alarms. There would seem to be only one general way to meet these requirements and that is to have all alarms sent to Fire Department headquarters through the central office of a fire alarm company fully equipped to render such service.



# World's Largest Pull Box

New York Evening Post Building Has Pull Box of Unusual Size to Handle Office Floors and Press Room

WHAT is believed to be the world's largest pull box has recently been installed in the new seventeen-story Evening Post Building, New York City. It has an overall length of 47 ft. 6 in., a width of 10 ft. and a depth of 4 ft. 8 in.

The basement and the first and second floors of this building, as well as the mezzanine floor, on which the pull box is installed, are occupied by the editorial rooms and plant of the newspaper while the remaining floors are devoted to offices. The equipment for a metropolitan newspaper and office building would ordinarily require a large switchboard and pull box of corresponding size, but due to the fact that in this instance a dumb waiter shaft ran nearly in the center of the space intended for the general light and power feeder panels, and the power feeder panels for presses, it was necessary to split the board into two sections. This necessitated increase in length.

There is also a third section of the board, containing control equipment for press No. 1. This section is parallel to the other two sections with a 10 ft. space between the opposite panels. The design of a pull box to serve all three sections of the board called for one of unusual size.

## General Arrangement

The general arrangement of the switchboard is as follows: (see plan view of pull box). There are 13 panels facing the nearest exterior wall of the building; four of these panels are on the right of the dumb waiter shaft and nine are on the left of the shaft. Only one of the four right hand panels is in use at present, the others being held in reserve for future installations. This one contains meters and main switches for press No. 1. Busbars feed from this section past the shaftway to the nine other panels on which are mounted the switches, circuit breakers, fuses and meters for the lighting of the entire building and all power except for the main press.

Parallel to the two main sections and facing in the opposite direction are six panels containing the press control equipment. This is standard General Electric Company apparatus. Five of

these panels each contain complete equipment for the control of one main press motor and its auxiliary motor. On the remaining panel are mounted double throw switches connected in the control circuits to provide for simultaneous operation of one or more press units. The six panels occupy a floor space 12 ft. 4 in. long. The remaining space along this side of the pull box will be taken up by similar panels for the control of additional presses when installed in the future. Power feeder panels for presses and general light and power are of 2-in. red marble and the press equipment control panels are of 2-in. slate. Three wire 220-volt d. c. service is fed to the switchboard from the New York Edison Company's main service board located in the basement.

The pull box has a section cut out of each end, thus making the box of such shape as to accommodate desired panels and to conform with the available space in the switchboard room.

The 130 conduits make entrance into the box along the sides near the top. Care was taken to bring the conduits into the box at such locations as to make the lengths of cable in the box as short as possible. In the bottom of the box, directly over the lugs, is a section 19 in. wide which runs the length of the box and is composed of ebony asbestos panels 1 in. thick, containing holes through which the cables make entrance to the box. Each of these sections is supported by two angles built into the bottom of the box.

Support for cables with the box is provided by a series of steel angles, which run crossways and have their flat sides uppermost. Strips of quarter-inch fiber are placed on top of these angles to guard against injury to the insulation.

Each conductor is served with a wrapping of asbestos tape which extends from the end of the conduit in the pull box through the openings in the insulating panel to the terminals of cables in lugs. The New York Board of Fire Underwriters which insisted on this protection at the time has since issued a ruling making it mandatory in all similar classes of construction.

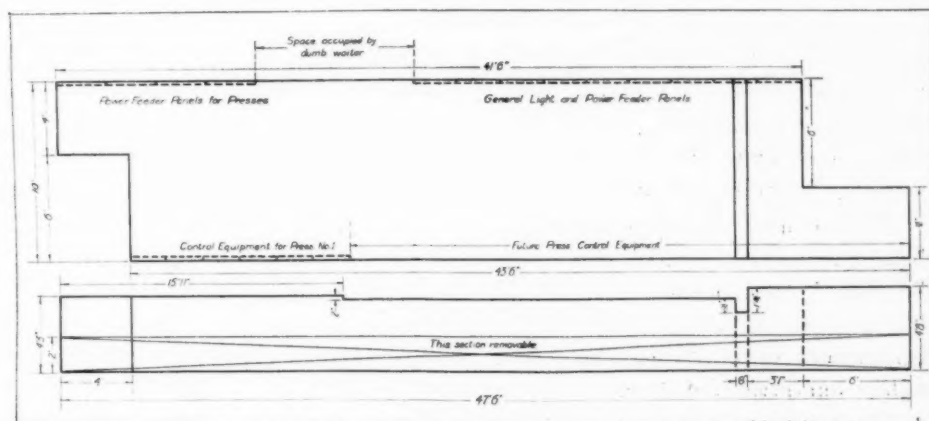
Main light feeders consist of two 600,000 c. m. cables per leg, with a total carrying capacity of 900 amperes or approximately 200 k. w. The main power feeders are six 1,000,000 c. m. cables in multiple, with a carrying capacity of 3,900 amperes or 858 k. w. Press No. 1 requires approximately 380 k. w. at full load.

## Feeders

There are 29 light feeders connected to light panels and 12 feeders connected to the power panels.

All feeders to fire and house pump motors are 400,000 c. m. in size. Feeders for sump motors and ash lift are No. 4/0. For the light feeders to various panelboards throughout the building cables are from 400,000 c. m. to No. 4/0 in size, a few being No. 1 and No. 6.

The electrical installation was made by the Thompson Starrett Company of Long Island City. The wiring for press motors and controls was installed by the Naumer Electric Company of New York City, and the pull box itself was made by the Cole Metal Products Company of Long Island City.



Plan view of world's largest pull box. Side and top views of gigantic pull box, believed to be the largest ever built

# *The Electragist*

Official Journal of the  
Association of Electragists—International

S. B. WILLIAMS  
Editor

H. H. STINSON  
Associate Editor

Hark, the herald angels sing  
Peace on Earth  
Good will towards men.

## Good Will Towards Men

Down through the ages the everlasting admonition has been "Love your fellow man." It is the experience of every one of us that the man who has the most friends is the man who is friendliest.

The man who goes around with a chip on his shoulder finds what he is looking for. He thinks he is protecting himself whereas he is only inviting trouble.

Our competitors are human beings just as we are. They live in homes, they like nice things, they love their families. They have their good side and the chances are that the good in them predominates.

Why then do we so limit our vision that we see only the unfavorable side of our competitors? Is it not perhaps because we look only at that side?

As Christmas time draws near the whole world will have its thought directed to the idea of "Peace on earth, good will towards men." We venture to say that peace will come to any contractor who throughout the year will look for and see the good in his competitors, for what one earnestly looks for one finds.

## Better Times Ahead for Dealers

The central stations have been in the merchandising business, then out of it and in the last five years have returned to it in greater numbers and with greater intensity. Will they stay in it?

The answer, of course, is "Yes"; but there is every reason to believe that they will conduct the business on a different basis. Today the central station with a merchandising department is pushing the sale of all appliances without a plan. In so doing they have antagonized all other dealers handling electrical appliances.

There is now coming to the utilities the realization that their merchandising departments must first of all secure the most harmonious relations with the dealers, secondly that they are not an appliance selling but a load building department and thirdly that the pioneering of an appliance is their job because of the prolonged profit to the utility.

There are two kinds of dealers, electrical and non-electrical. The latter handles electrical merchandise as an-

other line and not one to be pushed any more than any other.

The central station is beginning to realize that after the pioneering stage has been passed it is necessary to have many prosperous retail outlets to carry on. These can be assured only by helping them to become prosperous even during the pioneering period. The willingness to invest, therefore, in pioneering can be made most effective when it is turned toward cooperation with the contractor-dealer.

## The Situation in Armored Cable

The electrical contracting industry is not altogether pleased with the competitive situation that has crept into the armored cable business. This product is today the most unstable in price in the entire electrical field. Such a price situation is unfair to the electrical contractor because he can never feel that he is buying at the right price.

There is, however, another angle to the situation which has some very unpleasant possibilities. There is not a manufacturer but claims he is losing money on every shipment he makes of armored cable.

It is inevitable that such an economic situation can have but one solution, for a concern will not as a rule surrender its business to creditors until it has exhausted every means to survive.

Some of these means have already shown their heads—short coils, inferior cable, improper labeling, armor so wound that it spreads on bending, and similar lowering of standards. The history of the displacement of .035 by .025 metal is still fresh in the minds of many people.

The use of armored cable has grown to large proportions only within the past few years. It still has no small amount of resistance to overcome in a number of communities. Its more complete acceptance will not come through lowered standards. The way to meet objections, to make friends, to break down resistance is to improve the product and raise its standard.

## The Workers

Each time there comes to our attention a new local code we wonder if electrical people really know the sincerity and long hours of painstaking effort put into the making of the National Electrical Code.

Take just one of the article committees engaged in re-



vising its article in the Code. It met at Cedar Point for two days this summer, two months later worked day and night at Atlantic City for three days and less than a month later put in another strenuous three days in New York. Before the annual February meeting it will probably get together again. In between meetings the members are in correspondence with each other. At one of the meetings advisors were present—from the Pacific Coast, from the middle west, the south, the east and from various interested bodies.

These men in the course of a year will have given up, each of them, more than a month from their business to do this job.

And then the industry regards the Code so lightly. Why?

Surely no one thinks that men leave their business for a month during the year to be superficial. These meetings are no parties. The work starts early in the morning and is not finished until late at night.

The Code is revised by men of sincerity of purpose, men of ability, men who unselfishly give their time for what they honestly believe to be the common good—and then some municipal inspector, all alone, feels he can write a better code for his home town. He too is honest but he doesn't stop to think of the wide and long experience, sincerity and integrity that underlie the National Electrical Code.

### Low Voltage Life Hazard

Ordinarily 110 volts will not hurt a man let alone kill him. There are, however, a sufficient number of lives lost each year due to these low voltages to warrant us recognizing the danger.

It is probably true that in not a few cases the current is not the direct cause but is the contributing cause. Even so each time it happens a life is snuffed out.

Electricity of lower voltage even than 110 volts will kill if applied under the proper condition. Certain parts of the body are better conductors than others, a moist condition of the body may cause trouble or a person may be in excellent contact with the ground.

When guarding against injuries we must guard against the unusual. In guarding life we must be even more particular. It behooves us therefore not to sell and install things that may represent a life hazard.

One of the things that we especially oppose is the use of the screw plug type of convenience outlet. It is so easy for a child to get its fingers in it.

The use of cheap devices, particularly those that the customer assembles as sold by certain non-electrical stores are condemned. The grounding of metal frameworks of motor driven devices is urged.

Wherever a definite life hazard presents itself, no matter how small, the contractor is urged to protect against its occurrence.

And finally we urge the inspection interests to engage more in reinspection for there can most of the protection to life be given.

### A Pioneer

In 1887 Henry A. Sinclair joined what is now the Tucker Electric Construction Company, New York. The first of this month he is retiring to his farm.

Forty years! In that time almost all of the commercial development of the electrical industry has taken place. In 1887 the incandescent lamp was still one of the wonders; the first central station celebrated its fifth birthday, commercial use of alternating current was being discovered.

Forty years ago it took pioneers to enter the electrical business—men who had a vision. And these pioneers, who are now one by one relinquishing their places on the firing line to younger men, gave to the industry the solid foundation on which its progress has been predicated.

It was the pioneers who were responsible for improving things until today we have an electrical standard of public safety. These pioneers will point with pride to jobs they installed thirty or more years ago which are today giving service.

Pioneers who have successfully weathered the trials of a new and growing industry should be an inspiration to young men. In the earlier days the contractor had all the forms of competition that he now has plus the difficulty of breaking a new path. He had, among other things, to survive the bitter onslaught of the gas interests.

Still the contractors survived and built a strong business. Why? Because they built a reputation for square dealing, good work, fair prices. Those of the present generation cannot be pioneers but they can apply the business truths that the pioneers have so successfully demonstrated.

### Congratulations, Illinois!

After suffering under an intolerable State license situation for more than a year the electrical industry of Illinois has at last gotten together to clean things up. The old law was declared invalid by the courts and a new enabling act was passed by the legislature. It was the poorest kind of a compromise and naturally was unsatisfactory, so much so in fact that an injunction was secured preventing its operation. In the meantime there has been no inspection that could be legally enforced.

It was a rather severe way to show the electrical men of the State the necessity for harmonious relations and working together but if the lesson has been well learned perhaps the price was not too great.

Congratulations, Illinois! You will be surprised what you can accomplish in this one instance and perhaps it will open your eyes to other things that can be done by the joint action of a body of men who trust and respect each other.

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Denver (C) .....	E. C. Headrick	89 Broadway	Section No. 1 (C) .....	M. J. Levy	70 East 45th Street
Pueblo (C) .....	E. F. Stone	So. Colorado Power Co.	Independent (C) .....	Albert A. A. Tuna	127 East 34th Street
<b>CONNECTICUT</b>			Metropolitan (C) .....	George W. Neil	96 Beekman St.
Hartford (C) .....	A. A. Angello	473 Park Street	Niagara Falls (C) .....	E. M. King	515 Niagara Street
Waterbury (C) .....	D. B. Neth	107 West Main Street	Rochester (C) .....	Theo. T. Benz	278 State Street
Bridgeport (C) .....	L. E. Finch	529 Newfield Bldg.	Schenectady (C) .....	Richard Spengler	421 McClellan Street
<b>DIST. OF COLUMBIA</b>			Syracuse (C) .....	Fred P. Edinger	802 East Water St.
Washington (L) .....	P. A. Davis	1328 Eye St., N. W.	Utica (C) .....	W. C. Balda	228 Genesee Street
<b>FLORIDA</b>			Westchester Co. (C) .....	Jack Lalley	14 Mnr. Hse. Sq., Yonkers
Bradentown (C) .....	W. S. Stewart	W. & S. Elec. Co.	Yonkers (C) .....	Louis Mayer	485 South Broadway
Broward Co. (C) .....	Frank Swain	Orlando	<b>OHIO</b>		
Daytona Beach (C) .....	C. Leotah Benson	324½ S. Beach St.	Akron (C) .....	E. C. Rishel	540 East Avenue
Deland (C) .....	C. W. Allcorn	132 No. Florida Street	Canton (C) .....	H. S. Hastings	301 New Vickery Bldg.
Fort Myers (C) .....	P. K. Weatherly	Thompson-Weatherly	Cincinnati (C) .....	J. F. Riehle	1642 Cedar Ave.
		Elec. Co.	Cleveland (C) .....	T. J. Manahan	Chester Twelfth Bldg.
Indian Riv. Dist. (C) .....	I. O. Page	Vero Beach	Columbus (L) .....	O. A. Robins	1242 Oak Street
Jacksonville (C) .....	W. A. Harper	22 Laura St.	Toledo (C) .....	Fred C. Dunn	Builders Exchange
Miami (C) .....	E. A. Robinson	118 N. W. First Ave.	Dayton (C) .....	Clarence Carey	1107 South Brown St.
Orlando (C) .....	D. E. Anderson	Ayers Electric Co.	Marion (C) .....	O. H. Cornwell	461 W. Center Street
Palm Beach (C) .....	James W. West		Massillon (C) .....	F. D. Mossop	c-o Mesco Electric Co.
St. Petersburg (C) .....	Gardiner Blackman		Northern Ohio (C) .....	R. A. Wentz	Elyria
Tampa (C) .....	P. F. Lyons	P. O. Box 992	<b>OKLAHOMA</b>		
<b>GEORGIA</b>			Pawhuska	C. G. Sego	Pawhuska
Atlanta (C) .....	B. K. Laney	73 Walton St.	<b>OREGON</b>		
Savannah (L) .....	Sylvan M. Byck	Byck Electric Co.	Portland (C) .....	J. R. Tomlinson	51 Union Ave. N.
<b>ILLINOIS</b>			<b>PENNSYLVANIA</b>		
Chicago			Altoona (C) .....	Walter Bracken	Leechburg
Electrical Contractors' Association .....	J. W. Collins	160 No. LaSalle St.	Allegheny Valley .....	E. G. Jackson	12 West Third Street
Master Elec. Contractors' Association .....			Chester (C) .....	W. H. McMillan	12 E. Long Avenue
Decatur (C) .....	F. J. Boyle	304 S. Halsted St.	Du Bois (C) .....	C. E. Blakeslee	11th and French Sts.
Granite City (C) .....	Earl Weatherford	114 East William St.	Erie (C) .....	R. D. Goff	1605 N. 3rd Street
Peoria (C) .....	M. E. Kilpatrick	Nildingham & State Sts.	Harrisburg (C) .....	W. W. Weaver	Main and Market Sts.,
Rockford (C) .....	L. B. Van Nuy	238 So. Jefferson St.	Lehigh Valley (C) .....	A. W. Hill	Bethlehem
Springfield (C) .....	Donald Johnson	106 North Second St.	Philadelphia (C) .....	M. G. Sellers	1202 Locust Street
Wheaton (C) .....	A. D. Birnbaum	916 West Cook St.	Pittsburgh (C) .....	Fred Rebele	1404 Commonwealth Bld.
<b>INDIANA</b>			Wilkes-Barre (L) .....	Ambrose Saricks	25 No. Main Street
Gary (C) .....	A. B. Harris	570 W. Washington St.	<b>RHODE ISLAND</b>		
Indianapolis (L) .....	A. W. Kruege	2405 East 10th St.	Providence (C) .....	H. E. Batman	36 Exchange Place
Michigan City (C) .....	Walter A. Sassodeck	913 Franklin St.	<b>SOUTH CAROLINA</b>		
Muncie (C) .....	Harry McCullough	113 W. Howard St.	Charleston (L) .....	J. P. Connolly	141 Meeting Street
South Bend (C) .....	R. A. Frink	1338 Howard St.	<b>SOUTH DAKOTA</b>		
Terre Haute (C) .....	C. N. Chess	523 Ohio Street	Sioux Falls	H. W. Claus	326 S. Phillips Ave.
<b>IOWA</b>			<b>TENNESSEE</b>		
Cedar Rapids (C) .....	H. E. Neff	94 1st Ave., West	Chattanooga (L) .....	P. W. Curtis	725 Walnut Street
Davenport (C) .....	Louis F. Cory	510 Brady Street	Knoxville (L) .....	Jerry G. Cason	303 West Church St.
Fort Dodge (C) .....	J. A. Paul	16 South 12th Street	Memphis (L) .....	J. J. Brennan	12-16 So. Second St.
Sioux City (C) .....	E. A. Arzt	211 Fifth Street	Nashville (C) .....	J. T. Shannon	c-o Electric Equip. Co.
Waterloo (C) .....	R. A. Cole	Cole Bros. Elec. Co.	<b>TEXAS</b>		
<b>KANSAS</b>			Beaumont (C) .....	J. A. Solleder	Houston & Bolivar Sta.
Salina (C) .....	C. G. Loomis	814 Cedar St.	Dallas (C) .....	P. B. Seastrunk	2032 Commerce St.
Wichita (C) .....	P. W. Agrelus	Wichita	Houston (C) .....	J. W. Read	715 Capitol Avenue
<b>KENTUCKY</b>			<b>UTAH</b>		
Lexington (C) .....	J. H. Brock	235 East Main St.	Ogden	B. Kristofferson	2249 Washington Ave.
Louisville (C) .....	C. L. W. Daubert	921 South Third St.	Salt Lake City (C) .....	C. Louis Collins	215 Kearns Bldg.
Paducah (L) .....	K. H. Knapp	c-o Paducah Electric Co.	<b>VIRGINIA</b>		
<b>LOUISIANA</b>			Lynchburg (C) .....	J. L. Fennell	c-o Fennell & App
New Orleans (C) .....	I. G. Marks	406 Mar. Bk. Bldg.	Norfolk (L) .....	A. W. Cornick	200 Plum St.
Shreveport (C) .....	R. L. Norton	620 Marshal Street	Richmond (C) .....	E. M. Andrews	15 N. 12th Street
<b>MARYLAND</b>			<b>WASHINGTON</b>		
Baltimore (C) .....	W. D. Young	Calvert & Franklin Sts.	Seattle (L) .....	P. L. Hoadley	Seaboard Building
<b>MASSACHUSETTS</b>			Spokane (C) .....	William Stack	W. 1121 Cleveland St.
Lowell (C) .....	George A. Ryan	79 Middle St.	<b>WEST VIRGINIA</b>		
Haverhill (C) .....	H. W. Porter	14 West Street	Wheeling	Peter J. Erb	1414 Eoff St.
Malden (Medford, Everett and Melrose) (C) .....	H. J. Walton	c-o Malden Electric Co.	<b>WISCONSIN</b>		
Springfield (C) .....	A. R. Tullock	11-12 Court House Place	Green Bay (C) .....	V. E. Grebel	531 S. Broadway
Worcester (L) .....	John W. Coghlin	259 Main Street	Madison (C) .....	L. A. Ring	2017 Winnebago St.
<b>MICHIGAN</b>			Milwaukee (C) .....	E. H. Herzberg	1604 Wells Street
Detroit (C) .....	N. J. Biddle	112 Madison Ave.	Racine (C) .....	Jos. J. Small	1910 Linden Ave.
Grand Rapids (C) .....	T. J. Haven	1118 Wealthy St., S.E.	<b>CANADA</b>		
Kalamazoo .....	E. R. Hummel	1121 Seminary St.	Montreal (C) .....	George C. L. Brassart	674 Girouard Ave.
Saginaw (C) .....	E. T. Eastman	209 Brewers Arcade	Toronto (C) .....	M. McRay	24 Adelaide St., N.E.
<b>MINNESOTA</b>			Vancouver (C) .....	J. C. Reston	579 Howe St.
Duluth (L) .....	Morris Braden	c-o Minn. Power & Light Co.	Winnipeg (C) .....	Fred Ball	300 Princess St.
<b>MISSOURI</b>					
Kansas City (C) .....	A. S. Morgan	209 Globe Building			
St. Louis	W. F. Gerstner	4 E. Forty-third St.			
Electragists' Ass'n (C) .....	G. L. Gamp	120 No. Second St.			
Electric Employers' Association (C) .....		Wainwright Bldg.			

(C) designates exclusively Contractor-Dealer organization.  
(L) designates an Electrical League

# NOVEMBER ACTIVITIES

## Illinois Forms Strong Electragist Organization Under New A. E. I. Field Program

State Is Divided Into Six Sections and Formation of Local Associations of Electragists Within These Sections Is Expected to Go Forward Rapidly

**F**OLLOWING the establishment of the Illinois Association of Electragists by forty members of the A. E. I. at Chicago on September 29, an organization meeting was held at Rockford November 8 and 9 after the sessions of the general meeting covered elsewhere in this issue.

Monday's meeting was held in the rooms of the Rockford Electric Club and was devoted to a discussion of state legislation and resulted in a resolution empowering L. E. Mayer, executive committeeman for the Great Lakes Division of the A. E. I., and John Kuhlemeyer, secretary of the Illinois Electragists, to represent the electragists in future deliberations on the subject.

After being introduced by J. W. Collins, Arthur P. Peterson, A. E. I. field representative, presided over the Tuesday session which was attended by ninety members and non-members, and outlined briefly what was planned for the new state organization.

A special committee, consisting of Robert Dron of Madison, W. J. Ball of Moline and John Kuhlemeyer, charged with the responsibility of outlining the form of the association, presented a constitution and by-laws as their report. Under these rules the state is divided into six divisions as shown on the accompanying map.

Members present approved the committee's report unanimously. Electragists from each division then elected their executive committee as follows:

M. C. Whiting, Cairo, representing the Southern or Division No. 1; Edgar Rice, Alton, Southwestern or Division No. 2; Howard C. Krigbaum, Decatur, South Central or Division No. 3; Louis B. Van Nuys, Peoria, North Central or Division No. 4; C. F. Santee, Rockford, Northern or Division No. 5, and L. E. Mayer, Chicago, Northeastern or Division No. 6. At a subsequent meeting of this committee John Kuhlemeyer, Maywood, was elected to represent the

state at large and was also appointed secretary and treasurer, Edgar Rice was chosen president and C. F. Santee vice president.

The Illinois Association of Electragists was organized for the purpose of carrying out A. E. I. policies within the state under the new field program of



The New Illinois Electragist Body Plans Territorial Subdivision of Its Activities as Shown Above

the international organization and the organizing of local associations within the divisions will proceed rapidly.

### New York Independents to Dine and Dance

The twenty-third annual installation of officers will be the occasion of a dinner and dance for the Independent Associated Electrical Contractor-Dealers

of Greater New York, to be held at the Hotel Astor on January 12, 1927. Tickets for the affair are four dollars each and the entertainment committee has urged early reservation, since accommodations will be limited to 300.

Nominations for officers of the organization include the following: For president, S. J. O'Brien; for first vice president, H. M. Walter; for second vice president, Fred B. Zenker; for financial secretary, Nathan Zolinsky; for recording secretary, Albert A. A. Tuna; for sergeant-at-arms, M. J. Heller; for board of directors, Messrs. Freund, Gaynor, Hartmann and Bauer. Final nominations and election will be held in December.

### Central Hudson to Co-operate on Housewiring, Merchandising

The intention of the Central Hudson System of Gas and Electric Companies to work with the contractor-dealers in its territory on the promotion of housewiring and merchandising was announced at a meeting in Kingston, N. Y., on November 8. The plans were presented by E. R. Acker, general commercial manager of the Central Hudson system, and were approved by the Hudson Valley Electrical League, under whose auspices the meeting was held.

The housewiring plan provides a means by which contractor members of the league may turn over to the Central Hudson System the financing of deferred payments for approved residential electrical installations along the lines of the company.

In the merchandising plan, arrangements have been made for contractor-members of the league to merchandise, if they desire, on the terms in effect throughout the Central Hudson System, including campaigns in which special offers are made. To make participation in these terms possible for all league members on the same basis, the Central Hudson System has agreed to carry the deferred payment contracts covering the sale of merchandise by league members to customers of this company.



## National Lighting Exhibition for Both Industry and Public

The National Lighting Equipment Exhibition, to be held in Cleveland, January 31 to February 5, in conjunction with the manufacturers' and the dealers' conventions, will be of interest not only to the industry, but will also be thrown open to the public and to builders and architects. This is announced in a statement issued by the Artistic Lighting Equipment Association which reads as follows:

"It is our intention to make this yearly national exhibition the greatest educational and promotional exhibit of modern designed lighting equipment, including lighting fixtures, floor and table lamps, illuminating glassware, shades (silk, parchment and other material), lighting equipment parts and supplies, in the history of the industry.

"Its purpose is to raise the standard of design, quality, finish and workmanship of all types of lighting equipment, increase the use of better parts and supplies, promote the replacement of old and obsolete lighting equipment now in use, with more modern equipment, and to arouse more thought for its artistic and decorative effect on the surroundings.

"The exhibition will be attended by buyers, manufacturers, dealers, jobbers, electrical contractors, architects and builders, and on certain days and hours it will be open to the public."

## Lighting Equipment Dealers Announce Convention Plans

At a meeting of the board of directors of the National Association of Lighting Equipment Dealers on November 4 it was decided that the next annual convention of the association should take place in Cleveland, Ohio, at the Hollenden Hotel, January 31 to February 5, 1927. A very interesting program is now being prepared. Some of the subjects to be discussed at the "Round Table" conferences are the following:

Window and Show Room Display.

New Methods of Lighting Fixture Merchandising.

Correct Method to Use in Figuring the Cost and Profit of a Job.

Relationship of the Dealer and the Architect.

Shaded Light.

The Manufacturer's Relation to the Dealer and the Dealer's Relation to the Manufacturer.

Methods Employed to Eliminate Waste in Business and Increase Net Profits.

The Lighting Equipment Exhibition of the Artistic Lighting Equipment Association will take place in Cleveland at the Hollenden Hotel during the same week as the dealers' annual convention. By holding the convention and exhibition in the same hotel dealers will have an opportunity to inspect the exhibits of the manufacturers.

## Northwest Inspectors to Have Manufacturers' Show

The Northwest Association of Electrical Inspectors, which is to hold its next annual convention at Portland, Ore., on January 17 and 18, 1927, has announced that a manufacturers' show will be given in connection with the meeting. It will be educational in character. Space is now being reserved by exhibitors and it is expected to have all types of electrical material represented.

## Electrical Industry in Illinois Gets Together to Fight for State Licensing Law

Overturning of Previous Statute Said to Have Left State in Chaotic Condition and All Groups of Industry There Decide to Work in Harmony for a New Law

THE Nelson Hotel at Rockford, Ill., on November 8 and 9 was the scene of one of the largest and most representative meetings of the electrical industry of that state.

This meeting, originally planned by Rockford electragists through their business manager, H. E. Cherry, was sponsored by the Electric Association of Chicago for the purpose of laying plans for securing satisfactory legislation dealing with licensing of contractors and adequate inspection.

Recognizing the necessity of securing concentrated attention on the subject in hand a preliminary meeting was held Sunday night which outlined the program for the following two days. At this preliminary gathering it was decided to outlaw personal grievances against existing conditions and previous attempts to secure proper legislation, permitting new business only to be discussed and that confined to ways and means of obtaining desired results.

Presiding over the convention was Harry B. Kirkland of the Society for Electrical Development with J. W. Collins of Chicago as secretary. Every one of the two hundred and fifty delegates were given an opportunity to be heard on the first day, but at the close of this session a motion was carried that the interested groups, i. e., N. E. L. A. members in Illinois, National Electric Supply Jobber members, members of the National Association of Electrical Manufacturers, the Illinois Chapter of the Western Electrical Inspectors' Association and the Illinois Association of Electragists, should each select two spokesmen as official representatives on

a joint committee to cooperate with the Electrical Association of Chicago in preparing a suitable measure and determining the line of action.

That evening a banquet was served to all attending the convention.

After calling the meeting to order on Tuesday morning Chairman Kirkland invited John G. Gamber, State Fire Marshall, and chairman of the Illinois Chapter of Electrical Inspectors, and William S. Boyd, secretary of that organization, who added facts supporting the movement for adequate public protection through legislation backing up municipal inspectors and licensing qualified electrical contractors.

The following men were selected by their inspection groups to sit on a committee with the members of the Trade Relations Committee of the Electric Association of Chicago to carry through the desired legislation: Messrs. Gamber and Boyd, Victor H. Tousley of the Chicago Inspection Department for the inspectors group; John Gleason, Graybar Electric Company, Thomas Brooks, Illinois Electric Company, and R. E. Swords of Swords Brothers, Rockford, for the electrical supply jobbers; Fred Shiel, Crouse-Hinds Company; A. W. Batchelder, General Electric Company, and Thomas Bibber of the Triangle Conduit Company for the manufacturers; H. B. Gear, Commonwealth Edison Company, and F. E. Geschwenk for the central station interests; L. E. Mayer, White City Electric Company, Chicago, and John Kuhlemeyer, secretary and treasurer of the Illinois Association of Electragists, for the contractors.

## Merchandising Relationships of Dealer and Central Station Engage Iowa Electragists' Attention

**Belief Expressed at Annual State Meeting that Central Station Merchandising Should Stand on Its Own Feet and Not Have Help of Rate-Making Structure**

**D**ISAPPROVAL of a policy that permits central stations to lose money on merchandising and get it back in their rates was one of the high points of an interesting meeting held by the Iowa Association of Electragists at Ames, November 8.

The morning session of the convention was devoted to Association business, at which time the following officers were elected: President, Earl N. Peak, Marshall Electric Company, Marshalltown; secretary and treasurer, J. M. Payton, Electrical Engineering Company, Des Moines; executive committeemen, E. A. Arzt, Electric Construction Company, Sioux City; W. H. Best, Best Electric Company, Ames; C. H. Keller, Keller Electric Company, Dubuque; James G. Bradley, Bradley Electric Company, Council Bluffs, and H. R. Plowman, Black Hawk Electric Company, Waterloo.

At the close of the business session Arthur P. Peterson, field representative of the A. E. I., was called upon to outline the new field program of the international association and show how it could be applied to the State of Iowa.

After a luncheon the delegates were taken in cars to visit the electrical engineering buildings of Iowa State College, which is located in Ames.

The afternoon meeting was given over to a round table discussion of several subjects of much interest, among them, "Should Central Stations Sell Merchandise in Competition with the Electrical Contractor-Dealer?" and "Should Electrical Jobbers Sell Direct to Industrials at Contractor-Dealer Prices?"

The principal point brought out in a discussion of the first topic was that rate-making bodies should be informed of the practice of central stations including merchandising expenses in the cost of production.

A survey of lighting and power rates of municipal and private utilities will be made by the trade policy committee of the state association in a study of the relationship of rates to central station merchandising practices.

At the evening banquet Thomas Sloss of Ames presided as toastmaster. Musical entertainment was provided by Prof. Tolbert MacRae, head of the musical department of Iowa State College, and the Ames Quartette. Speakers of the evening were E. A. Arzt, retiring president of the Iowa association; P. F. Hopkins, city manager of Ames, and Professor Frank D. Payne of the Electrical Engineering Department of Iowa State College. The latter spoke on "Electrical Service for the Farm."

The next meeting of the Iowa Electragists will be held in Sioux City, at which time Nebraska, South Dakota and Southern Minnesota Electragists will be invited to participate.

### Syracuse League Elects 1927 Officers

The Syracuse Electric League has appointed the following officers for 1927: W. Brewster Hall, president; Jacob Heil, vice president; E. E. Martin, treasurer, and Harvey N. Smith, secretary-manager.

The league is planning a considerable extension of its activities during the coming year.

### Licensing Law Passed in Buffalo

All electrical contractors doing work in Buffalo, N. Y., hereafter must be licensed as master electricians, according to the provisions of an ordinance passed by the City Council on November 4. Examinations will be conducted by a board of five men, appointed by the City Council upon nominations submitted by the Commissioner of Parks and Public Buildings.

One of the sections of the ordinance prohibits the granting of a license to any person who does not have an established place for the regular transaction of business. Five years' experience in electrical work is also required.

A bond of \$5,000 is required and the

fee for the first year's license is \$100. Each succeeding year will require a fee of \$50.

Violation of the ordinance carries a penalty of a \$100 to \$500 fine or, in default of this, a jail sentence of 30 to 90 days.

The licensing ordinance will supplement a previous ordinance which calls for all-metal wiring.

### Industrial Lighting Committee Plans Follow-Up

The Industrial Lighting Committee of the National Electric Light Association has announced that in order to gain the greatest benefit from its successful campaign in 1925 there will be inaugurated a follow-up campaign for the coming year.

This will include distribution of an "Industrial Lighting Fact Book," which will contain information of assistance in organizing and conducting local industrial lighting campaigns.

A new advertising campaign began with October, 1926. It is proposed to concentrate all the effort of this campaign upon the consumer and space has been reserved during the next seven months in various class publications which go to industrial executives.

### Rochester Contractors' School Under Way

The contractors' school course, being conducted by the Electrical League of Rochester, N. Y., got under way on November 15 with a talk on Estimating by Arthur L. Abbott, technical director of the A. E. I. The standard A. E. I. course in Estimating consists of ten lessons and of these Mr. Abbott gave two each on the nights of the fifteenth, sixteenth and seventeenth. The attendance at the meetings averaged thirty, with a total of 36 individual contractors who heard one or more of the talks.

The school continued its sessions on November 23, with a session on Business Administration and Accounting. This talk was given by A. E. McCoy, public accountant, and the league has scheduled further discussions on these subjects by Mr. McCoy.

Mr. Abbott will return to Rochester on December 6 and will conclude the course in Estimating in talks that night and the following night.



## Tennessee Electragists Hold Annual Meeting

New officers were elected for the Tennessee Electric Contractors and Dealers' Association at the closing business session of the annual convention held November 12 and 13 at Whittle Springs Hotel, Knoxville. It was decided to have the 1927 convention at Memphis next fall. No exact date was announced.

Officers elected for the coming year are as follows: R. L. Clift, Memphis, president; J. T. Shannon, Nashville, first vice president; W. A. Jewell, Chattanooga, second vice president; L. P. Self, Knoxville, third vice president; J. A. Fowler, Memphis, secretary-treasurer.

J. A. Atkinson of the General Electric Company addressed the electragists on the value of the importance of advertising. He and all the other speakers emphasized the need of publicity and advertising. Other talks were by Earl E. Whitehorne on "Industry Outlook," and by H. C. MacMurchy on "Electric Leagues and Their Work."

Charles R. Wright, Knoxville, spoke on codes and ordinances.

Trade policies were discussed by D. W. Curtis, Chattanooga. He urged that jobbers and retail dealers follow their agreement not to encroach upon each other's business.

Luncheon was served at the hotel following the business session. Golf and other entertainment for the visiting dealers was on the program for the afternoon.

Before the adjournment of the business session Mr. Fowler, who is also international president as well as secretary of the state organization, asked that Knoxville and Chattanooga send large delegations to the convention at Memphis next year.

## New Jersey Defers Grounding and Polarization

The New Jersey State Department of Labor has deferred putting into effect the new grounding and polarization requirements, which it had planned to make effective on September 1. This action was in response to requests from the industry for time for further consideration in order that the proposed safety requirements be kept in harmony with the National Electrical Code as well as with other standards applying. In bringing this about the department is to have the assistance of an industry committee, of which the N. F. P. A. electrical field secretary, W. J. Canada, will be a member.

Details of the grounding and polarization requirements were given in the October issue of THE ELECTRAGIST.

## England to Conduct a Home Lighting Campaign

The Electrical Development Association, the electrical industry organization of England, is conducting a home lighting campaign, similar to that put on recently in the United States, according to announcements in the British trade press. The campaign plan follows very closely that of the United States and the literature is much the same, except where it was found necessary to change the terminology.

The campaign began on October 3 and by the middle of the month 750,000 of the competition booklets had been distributed.

## Clarence L. Collens Receives McGraw Award

The James H. McGraw Manufacturers' medal and purse for 1926 was awarded to Clarence L. Collens, president, Reliance Electric and Engineering Company of Cleveland, at the fall meeting of the Apparatus Division of the National Electrical Manufacturers' Association at Briarcliff Lodge, on October 25.

The award was made in recognition of his part in effecting the recent union of the various electrical manufacturers' associations in the National Electrical Manufacturers' Association.

Here are the two posters advertising the exhibition of lighting equipment to be given in connection with the joint conventions of the lighting equipment manufacturers and the dealers in January. The Artistic Lighting Equipment Association is urging all dealers to hang these display posters in a prominent place in their establishment as a means of creating interest in modern lighting equipment.

*Decorate with Artistic Lighting Equipment*

CHANDELIERS  
WALL BRACKETS  
ACCESSORIES

FLOOR LAMPS  
TABLE LAMPS



NATIONAL EXHIBITION of the  
ARTISTIC LIGHTING EQUIPMENT ASSOCIATION  
HOLLANDEN HOTEL (Newland)  
Jan. 31st to Feb. 5th (inclusive) 1927

The best in Lighting Equipment shown under one roof

OPEN TO DEALERS, ARCHITECTS, BUILDERS and JOBBERS  
SPECIAL DAYS FOR THE PUBLIC



Open to  
dealers  
architects  
builders  
jobbers

Special days  
for the  
public

The best in  
Lighting Equipment  
shown under one roof

Jan. 31st to  
Feb. 5th 1927  
inclusive

*Decorate  
with  
Artistic Lighting Equipment*

CHANDELIERS  
WALL BRACKETS  
ACCESSORIES

FLOOR LAMPS  
TABLE LAMPS

## Indiana Electragists Pass Resolution Favoring State Law for Contractor Licensing

Association to Work for State Law Which Will Enable Cities to License Electrical Contractors—Discusses Means of Inspection in Small Towns Employing No Salaried Inspector

AT a meeting of the Indiana Electragists, held October 28 at the Lincoln Hotel, Indianapolis, the organization came to a decision to work for a state license law for electrical contractors.

Mr. Howard of Evansville made a partial report covering the activity of the legislative committee. Discussions on the report followed, led by Messrs. Howard, Granger and Harrison.

A motion was carried favoring a state law enabling cities to license electrical contractors and all contractors in the state are to be asked to give this movement their support by soliciting the help of their representatives in the Legislature.

It was decided to hold a luncheon meeting of the association at the Lincoln Hotel, Indianapolis, November 28. Jack Owens, secretary of the State Industrial Committee, was to be invited to address the meeting regarding the work his committee is doing in codifying the building code as it applies to the electrical contractor.

Officers were elected for the coming year as follows: F. O. Broyles, Tom Hatfield and Ralph Brassie as presi-

dent, vice-president and secretary-treasurer respectively.

Mr. Granger, of Gary, invited the state association to hold a meeting in Lake County. This invitation was accepted and arrangements will be made for a meeting some time in February.

Mr. Barless asked what was being done in regard to inspection in small towns where no salaried inspector was employed. Several cases were cited where this work was being done by the town clerk and lighting company.

### Uniform Mechanics' Lien Tentative Draft

The first tentative draft of the uniform mechanics' lien act, upon which a committee of the Department of Commerce has been working for many months, is now being distributed to interested parties for comment and suggestion. In a statement accompanying the draft, Dan H. Wheeler, secretary of the department's committee, calls attention to the fact that there are few new departures in the draft, practically all of its provisions having been found workable in several jurisdictions.

The purpose of the committee is to

make the final draft suitable for enactment as a uniform state law and not as a federal statute.

Copies of the tentative draft may be obtained from Mr. Wheeler, Room 601, Department of Commerce, Washington, D. C., at the nominal price of 10 cents per copy.

### Northwest Inspectors Suggest Xmas Safety Letter

The Northwest Association of Electrical Inspectors in one of its recent bulletins to members has suggested that a particular effort be made to keep down fires from electrical causes during the holiday season. The recommendations include the warning of the public about the proper use of Christmas tree lighting sets and also a letter which can be sent to all merchants. The letter reads:

Mr. Merchant.  
Dear Sir:

This department is extending its services in an effort to promote the safe use of electricity in connection with displays during the coming holiday season. Its duties include the elimination of hazards to life and property from electrical wiring and apparatus by a careful inspection of electrical installations.

If any temporary or permanent electrical wiring is contemplated we ask your cooperation and would appreciate the opportunity to call and assist you in planning your holiday decorations with a view of maintaining safety to life and property.

May we ask your support for a "NO ELECTRICAL FIRE DURING THE HOLIDAYS?"  
Yours very truly,

Electrical Inspector.

## New Electragists

The following contractor-dealers have made application and been accepted into the A. E. I. since the publication of the last list in the November issue:

<p><b>FLORIDA</b></p> <p><b>Tavares:</b> C. V. Millikan Elec. Co.</p> <p><b>ILLINOIS</b></p> <p><b>Belleville:</b> Reliable Elec. Shop</p> <p><b>Chicago:</b> Kelso-Burnett Elec. Co. M. Oboler</p> <p><b>Collinsville:</b> Collinsville Elecl. Sup. Co.</p> <p><b>DeKalb:</b> Swanson Bros.</p> <p><b>Dundee:</b> Albert E. Melahn</p> <p><b>Edwardsville:</b> Edwardsville Plbg. &amp; Htg. Co.</p>	<p><b>Guarantee Elec. Shop</b></p> <p><b>Elgin:</b> Berryman &amp; Schroeder Elgin Wiring &amp; Fix. Co. Spencer C. Johnston E. W. Lawson John Wegmann</p> <p><b>Granite City:</b> Boyd Plbg. &amp; Htg. Co. Electric Service Co. Metropolitan Elec. Co.</p> <p><b>Kewanee:</b> Star Elec. Co.</p> <p><b>Lake Forest:</b> Utility Elec. Co.</p> <p><b>Momence:</b> George Charboneau</p> <p><b>Rock Island:</b> Tri City Elec. League</p>	<p><b>West Chicago:</b> Wm. I. Kelly</p> <p><b>Woodstock:</b> Hoagland Elec. Shop</p> <p><b>Villa Park:</b> Villa Park Elec. Shop</p> <p><b>IOWA</b></p> <p><b>Ames:</b> Best Elec. Co.</p> <p><b>Marshalltown:</b> Marshall Elec. Co., Inc.</p> <p><b>MASSACHUSETTS</b></p> <p><b>Fall River:</b> Brady Elec. Co.</p> <p><b>MICHIGAN</b></p> <p><b>Flint:</b> Allen Elec. Co.</p>	<p><b>MISSOURI</b></p> <p><b>Kansas City:</b> H. A. Bain Elec. Co. Bozarth Elec. Co.</p> <p><b>St. Louis:</b> Boquett Elec. Co.</p> <p><b>OHIO</b></p> <p><b>Huron:</b> Esch Elec. Engrg. Co.</p> <p><b>Sandusky:</b> Diamond S. Elite R. Renwand Elec. Co.</p> <p><b>WEST VIRGINIA</b></p> <p><b>Wheeling:</b> Gee Elec. Co.</p>
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## Eastern Inspectors Code Committee Organization

The code standards committee of the Eastern Association of Electrical Inspectors has completed its organization, according to F. N. M. Squires, committee chairman, and assignments to the committee members are as follows:

H. B. Smith, Underwriters' Laboratories, Articles 5 and 6.

C. J. Platt, Jr., United Electric Light and Power Company, Articles 7, 10, 16, 30, 31, 32 and 33.

Joseph Sachs, Johns-Pratt Company, Articles 4, 8, 12 and 13.

W. W. Vaughn, chief inspector, Syracuse, N. Y., Articles 9, 11, 14, 15, 17, 18 and 36.

T. H. Day, N. E. Insurance Exchange, Articles 19, 34, 35, 37, 38, 39, 40, 50 and 60.

## Sinclair Retires After Forty Years

Henry A. Sinclair is retiring from the Tucker Electric Construction Company of New York after an association of almost forty years, having joined the company in 1887. Mr. Sinclair will spend his remaining years on his farm at Mystic, Conn. The retirement of Mr. Sinclair brings to a close one of the closest and longest associations in the electrical contracting business. Three years after he joined the business James R. Strong, past president of the Association of Electragists, Int., joined the company. For thirty-six years Mr. Sinclair and Mr. Strong have worked together in the building of the Tucker Electrical Construction Company.

## Electrical Credits Improve

A decrease in both number and total amount of delinquent electrical accounts during October is reported by the National Electrical Credit Association. There were 1,211 accounts reported in arrears as compared with 1,597 in October, 1925. The amount involved was \$144,458 as against \$184,055 for the same period last year.

## Miami to Have New Code

A new electrical code for the city of Miami was given its first reading by the city commission during October. It provides for the appointment of an examining board by the city commission

and carries rules and regulations covering general electrical work, including wiring and installations.

The new code, which will be in operation through the office of D. G. Nivin, chief of the city electrical division, requires, among other things, that all electrical workers and contractors must post a bond and carry a permit.

The code has been under consideration for more than a year and has the endorsement of architects, engineers and electrical contractors in the city.

## OBITUARY

### Edgar J. Ellis

The electrical contracting field has sustained a real loss in the death of Edgar J. Ellis, president of the United Electric Construction Company, Philadelphia, which occurred on October 13. Mr. Ellis at the time of his death was one of the outstanding electrical construction experts in the metropolitan district and was also active in association work.



Edgar J. Ellis

Mr. Ellis established the United Electric Construction Company twenty-three years ago and was the first and only president to the time of his death. His genius in the electrical field was

demonstrated by some of the monuments which he left in regard to electrical construction, namely, the Metropolitan Opera House, the Adelphia, Ritz-Carlton, Ben Franklin, Sylvania and several more large hotels, also a large amount of work in the West and New York City of major proportions.

He is survived by a widow, Alice Dixey Ellis, to whom was sent a copy of a resolution of condolence passed by his associates.

The resolution read:

Dear Mrs. Ellis:

*At a meeting of the Luncheon Club of the Electrical Contractors' Association of Philadelphia it was resolved that the passing of Edgar J. Ellis is a loss which is irreparable not only to those with whom he was more or less intimate but to the whole industry. We will miss the cheer and good fellowship that was present wherever he was. We will miss his wise counsel and his constant influence for good in the industry in which he worked and which he adorned. Our gatherings will never again be complete without his presence, for there is none who can fill the gap left by his passing.*

*We know that there is little we can say to those dear to him that will lessen the anguish of their loss, and yet it must be satisfying to you to know that his life meant so much to others, and that his influence has made an impression for good that will live on and on.*

*Accept our sincere though inadequate expression of sympathy, and be assured that we share your loss.*

## News Notes Concerning Contractor-Dealers

Oberg, Blumberg & Bleyer have removed their offices to 67 West Forty-fourth Street, New York City.

The new store of the Swanson Brothers Electric Company at DeKalb, Ill., was opened during October.

M. E. Mote has purchased the electrical business of F. H. Smock and Wayne Mosier at Noblesville, Ind.

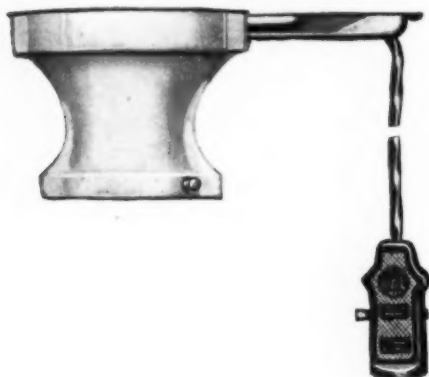
The C. C. Dillow Electric Shop was opened recently at New Lexington, Ky.

J. Lytle Jones has sold the Home Electric Service Shop, Marshall, Mo., to Clinton W. Haynes.

# News of the Manufacturers

## Kitchen Lighting Unit

The F. W. Wakefield Brass Company of Vermilion, Ohio, announces the improved "Red Spot" kitchen lighting unit illustrated herewith. This fixture is a stamped and spun



steel base, heavily porcelain enameled in white both inside and out. The interior assembly is spot welded, giving rigidity. Two lugs for holding the glassware are mounted in proper position inside the fitter with a single thumb-screw protruding from the rim to adjust the holding tension. This screw has a beveled end and upset thread so it can neither loosen while the weight of the glass is upon it, nor can it be backed out and dropped in process of installing or removing the glass.

This design takes the place of porcelain enameled "Red Spot" kitchen units previously listed.

## Wiring Supplies

The Roach Appleton Manufacturing Company, Chicago, has added the following items to its lists:

Steel fish wire, 1/8, 3/16 and 1/4 in. wide in both .030 and .060 thickness, each coil packed in a labeled carton.

Concrete boxes and plates in all sizes.

Utility boxes and covers of all types.

Gang switch boxes and covers in all types, both regular and shallow depth.

Tandem switch boxes.

No-bolt fixture studs.

Locknuts and bushings.

Connectors and hickey type fixture studs.

## Midget Switches

A new midget safety enclosed switch and a new midget motor starting switch have recently been placed on the market by the Westinghouse Electric and Manufacturing Company. Several new features of design are embodied in these switches.

The midget enclosed switch is a 2-wire, single-blade single-fuse switch applicable to circuits of 125 v. up to 30 amp. Its overall dimensions are only 6 5/8 in. x 5 7/16 in. x 3 11/16 in. The switch consists of two principal parts, the box and the switch unit. The unit in this switch is particularly compact, and, in spite of the very small size of the box, allows ample room for wiring.

The midget enclosed switch is applicable to heavy duty lighting circuits and on heating devices. It may also be used as a single fused entrance switch, and for starting single phase motors up to 1/4 hp. on household devices.

The new Westinghouse Midget safety motor starting switch, known as Type WK-11, is the smallest motor starting switch on the market today that provides protection to the motor both while starting and running. This switch is designed for starting single phase, a-c motors up to 1/4 hp. and is provided with a plug type thermal cutout.

## Electric Range

The Benjamin Electric Manufacturing Company, Chicago, has begun the production of its new "Crysteel" electric range and has illustrated and described it in its catalogue No. 302. It is the intention of the company to sell this new line through electrical jobbers exclusively. The exterior of the range is of porcelain enamel, said to possess remarkable durability. It is made in three sizes, four, three and two burner, the latter being called the "Compact." Combination of the various sizes with the different types announced gives a line of thirty-six different ranges. The standard form of wiring is for 3-wire, 110-220 v. circuits, either a. c. or d. c. Temperature control is regularly supplied for alternating current. Special wiring may be obtained when specified.

## Tumbler Switch

The Arrow Electric Company, Hartford, Conn., is manufacturing a new tumbler switch as an addition to its "Arrow Head" line. The switch has plaster ears which help in positioning it and is built with a combination yoke and frame, one piece. The main bearing-pin



is permanently fastened when assembled and there is a self-supporting spring for long life and smooth action. Other features pointed out by the company are: Continuous carrier plate, contact blades of heavy bronze, one-piece contact and terminal held in positive position by two screws, thick walls to prevent breakage and a dust cover to protect the mechanism. It has a brown-tone handle to match either brass or molded plates.

## Push Button Stations

A number of improved push button stations, for use with various types of industrial magnetic control, have been introduced by the General Electric Company. These cover various fields of application, each being designed to meet some special set of circumstances.

A standard dust- and water-tight push button station of particular value in cement mills, coke plants, etc., is embodied in a design bearing the designations BS-8-E and BS-4-AA, "Stop" and "Run-Stop," respec-

tively. These have silver contacts enclosed in a malleable iron box with a leather diaphragm between the buttons and holes in the cover, the pressure on the leather diaphragm operating the switch.

Where it is necessary to have contacts immersed in oil to minimize the danger of explosions or to prevent corrosion of the copper contacts, the "Stop" and "Start-Stop" stations bearing the designations BS-11-CL and BS-12-DK are recommended. These are specially designed to allow easy removal of the tank for filling with oil.

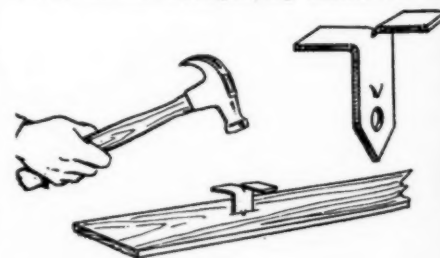
Another form is a standard three-button station designated BS-73 and developed as an inexpensive device for light duty without plugging. This is recommended for window opening service, valve control, operating dumb waiters, etc. Three forms are available: (A) with buttons marked "Forward," "Reverse" and "Stop;" (B) with markings "Raise," "Lower" and "Stop;" and (C) marked "Open," "Close" and "Stop."

A push button station provided with protected indicating lamp is covered by types BS-11-DP, BS-12-HV and BS-12-HW. Eighteen-volt, resistance type lamps are used, instead of the bull's eye, 115-volt type, improved protection being provided by the resistor which always limits the control current to a safe value for the contacts. The three types cover "Stop," "Start-Stop" and "Fast-Slow" markings and are standardized for 125 volts, although stations for any other standard voltage can be supplied.

An improved line of stations for back-of-panel mounting where the front is to be flush with the front of the base has also been announced. Examples are the BS-11-DG ("Stop") and BS-12-FR ("Start-Stop") forms, designed for mounting on any base between one and one and one-half inches thick. In mounting the new stations a cover can be removed after mounting in order that connections can be made as desired.

## Concrete Hangers

The Commonwealth Electric Company, 417 Broadway, St. Paul, Minn., has announced a new concrete hanger for conduit, claimed to be a labor-saver of considerable value. The hanger and the method of installation is shown in the accompanying illustration. To



install it, the pointed end is driven into the wooden forms until the spur on the side is firmly imbedded in the forms. This serves to hold the insert in position until the concrete is poured, no nails being necessary. After the forms are removed the lower part of the insert projects through the concrete slab and any style of pipe hanger can then be at-



# X-Ray

TRADE MARK REG.

# Reflectors

## For Every Window-Lighting Need!

Shallow windows, deep windows—high windows, low windows—each may be correctly illuminated with scientifically designed X-Ray Reflectors.

The "Jack" and "Jill" reflectors at \$4.50 each are two of the most popular units for medium size windows, while the "Queen" at \$6.00 is the running mate of the "King" for larger windows. Do not forget the No. 33 FLOOD-RAY for unusual effects!

*Every Good Electrical Dealer Sells These!*

**CURTIS LIGHTING, Inc.**

1119 West Jackson Boulevard

31 W. Forty-Sixth St.  
New York

CHICAGO

3113 W. Sixth Street  
Los Angeles



tached. It is claimed by the manufacturer that the insert effects a saving in first cost, in cost of installation and in the cost of replacing inserts knocked out of place under previous methods of installing hangers.

### Lath Support

A new device for supporting the loose ends of wooden lath at ceiling and wall outlets where outlet boxes are mounted on steel bar hangers has been placed on the market by the National Metal Molding Company, Pitts-



burgh. It has been designed to eliminate the difficulty of supporting the loose ends of the lath at the outlet. Frequently, under ordinary conditions, the ends of the lath were allowed to hang free. With this condition existing the plaster in the vicinity of the box would break away causing no end of trouble. The new lath support is said to provide a permanent support for the entire outlet installation.

Patent has been applied for by the National Metal Molding Company.

### "Fusenter" and Pull Box

A combined "fusenter" and pull box has been announced by the Mutual Electric and Machine Company, Detroit. In the new device the "fusenter" cabinet also serves as a pull box and main feeders can be run up through the various floors and taps taken off to the individual "fusenters" incorporated in the same cabinet.

Another new device in the "Bulldog" line is a "fusenter" equipped with switch plates provided with rectangular knockouts for standard makes of toggle switches. These are said to be especially adapted for buildings where the cost factor precludes the use of panelboards. They may also be used in beauty parlors, barber shops and similar establishments as convenience outlets for electrical attachments.

### Adjustable Die Stocks

In October the Borden Company, Warren, Ohio, placed on the market a new series of adjustable die stocks under the catalogue designation No. 70 Series Beaver. The feature of the device is that the die adjusting cam is underneath the dies, eliminating all obstruction above and around the threading dies, so that the full width of the die is openly exposed above the body of the tool for the free application of oil directly onto the dies. It is also claimed that this will reduce the tendency of the die to tip when presented against the pipe.

The device is made in right or left-hand threads, with regular or long-running threads and in British or American threads.

### Switch Plates

The Robinson Products Company, 831 Cherry Street, Philadelphia, is now manufacturing switch plates made out of "pyradolin," a special material manufactured by the Du Pont Viscoloid Company. The new material makes it possible to supply switch plates in a wide variety of color effects to match the decorations of a home. The company states that the plates retain their color

indefinitely, have no tendency to crack or chip and may be cleaned by wiping them with cloth.

### Radio Tube Tester

George Richards & Co., Inc., 557 West Monroe Street, Chicago, has just placed on the market a radio tube tester. Two types are ready for distribution at the present time, one for 201-A tubes UV or UX and one for UV-199 type tubes. The tester operates from the radio set power supply. A double lead wire (brown) is connected one lead to A+; the other to A-, while the single lead wire (maroon) is connected to the 45 volt B. The operation of the tester is as follows: After making the connections as indicated above



the tube is inserted in the socket and a button on the tester is pushed. The condition of the tube is registered immediately on the chart inserted on the face of the tester by the readings: Poor, Fair, Good. It can also be operated from a battery eliminator in which case a minimum of 30 milliamperes must flow into the tester.

### Manufacturing Notes

The Moe-Bridges Company, 236 Broadway, Milwaukee, has issued its catalogue, No. 27, illustrating its residential and commercial lighting equipment. The catalogue is printed in color, making it very suitable for use as a sales book.

W. E. Etheridge has been appointed sales manager of the electrical division of the American Flyer Manufacturing Company, Chicago.

The New York showroom of the R. C. Heather Company has been moved to 68 West Forty-eighth Street.

The full list of the Chicago Fuse Manufacturing Company's product is illustrated and described in its new catalogue, no. 31. The first section is devoted to Union renewable fuses and renewal links, Union indicating, non-renewable fuses, Gem non-indicating, cartridge fuses, Gem mica top plug fuses, Union fuse wire, cutout bases, cutout fittings, lugs, etc. The second section catalogues the full line of Union outlet boxes, bar hangers, extension rings and outlet box fittings. Gem switch boxes, including sectional, bracket and lockite types, are also covered fully in this section.

B. L. Delack has been appointed assistant manager of the Schenectady works of the General Electric Company.

New appointments have been announced as follows by the Square D Company, Detroit: F. J. Holzhauer, branch sales manager at Cincinnati; W. D. Clark, sales representative in the Pittsburgh office. The Milwaukee office of the company has been moved to the First Wisconsin National Bank Building.

J. H. Waterbury, well known illuminating

engineer, has been retained by the Benjamin Electric Manufacturing Company, Chicago, as head of its illuminating engineering department.

The Westinghouse Electric & Manufacturing Company has opened a permanent exhibit at Atlantic City, N. J. The exhibit includes a display floor for appliances and also a two-story electric home.

Catalogue No. 20, recently issued by the Wadsworth Electric Manufacturing Company, covers the line of accessible service fuse type switches made by the company.

The McGill Manufacturing Company, Valparaiso, Ind., has issued its catalogue No. 21, covering its electrical specialties for industrial, commercial, residential and workshop installation.

Appointment of the following sales agents has been announced by the Roach-Appleton Manufacturing Company: A. I. Clifford Company, Birmingham and Tampa, for the States of Florida and Mississippi; James A. Dupree, 130 Belden Avenue, San Antonio, Tex., for the States of Arkansas, Louisiana, Oklahoma and Texas, excepting Amarillo and El Paso; and Walter S. Sweet, 312 Omar Avenue, Los Angeles, for Southern California.

A wall chart illustrating its line of interchangeable porcelain fittings is being distributed by the Arrow Electric Company, Hartford, Conn.

The Graybar Company has moved its Detroit branch to larger quarters at 55 West Canfield Street.

A complete catalogue of "Red Spot" lighting specialties has been announced by the F. W. Wakefield Brass Company, Vermilion, Ohio. Changes in prices, quantities and weights of standard packages are incorporated in the new catalogue.

"Copper Bearing Steel Resists Corrosion" is the title of a new booklet issued by the Truscon Steel Company, Youngstown, Ohio.

H. L. Woehle has been appointed sales manager for the St. Louis territory of the Edwin F. Guth Company and H. M. Williams will succeed Mr. Woehle as district manager of the southern territory with headquarters at Birmingham. D. C. De Lancey has been appointed eastern representative with headquarters at Philadelphia.

The Circle F Manufacturing Company, Trenton, N. J., has appointed the A. I. Clifford Company, Odd Fellow Building, Indianapolis, as its representatives in Indiana, all of Illinois except Chicago and all of Kentucky outside of Louisville.

The Fretz-Moon Tube Company, Butler, Pa., recently completed an extensive addition to its plant and has installed equipment for the manufacture of rigid conduit, elbows and couplings, both galvanized and black-enamelled. Harry W. White has been appointed sales manager and will make his headquarters at the Butler plant. Trade names of the new products will be "Galvite" and "Enamelite."